UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II

IN THE MATTER OF: RADIATION TECHNOLOGY INC. SUPERFUND SITE ALLIANT TECHSYSTEMS INC. Respondent. Proceeding Under Sections 104, 122(a), and 122(d)(3) of the Comprehensive Environmental Response, Compensation, and Liability Act as amended (42 U.S.C. §§ 9604, 9622(a), 9622(d)(3).	U.S. EPA Index No. CERCLA- 02-2004-2033

ADMINISTRATIVE ORDER ON CONSENT
FOR REMEDIAL INVESTIGATION AND FEASIBILITY STUDY

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I. INTRODUCTION

1. This Administrative Order on Consent ("Consent Order") is entered into voluntarily by the United States Environmental Protection Agency ("EPA") and Alliant Techsystems Inc. ("Respondent"). The Consent Order concerns the preparation of, performance of, and reimbursement for all costs incurred by EPA in connection with a Remedial Investigation and Feasibility Study ("RI/FS") for Operable Unit 2 ("OU-2") at the Radiation Technology, Inc. Superfund Site ("Site") located in Rockaway Township, Morris County, New Jersey. OU-2 addresses the source(s) of groundwater contamination at the Site.

II. JURISDICTION

2. This Consent Order is issued under the authority vested in the President of the United States by Sections 104, 122(a) and 122(d)(3) of the Comprehensive Environmental Response, Compensation, and Liability Act, ("CERCLA") as amended, 42 U.S.C. §§ 9604, 9622(a), 9622(d)(3). This authority was delegated to the Administrator of EPA on January 23, 1987, by Executive Order 12580, 52 Fed. Reg. 2926 (Jan. 29, 1987), and further delegated to the Regional Administrators on May 11, 1994, by EPA Delegation Nos. 14-14-C and 14-14-D.

3. The Respondent agrees to undertake all actions required by the terms and conditions of this Consent Order. In any action by EPA or the United States to enforce the terms of this Consent Order, Respondent consents to and agrees not to contest the authority or jurisdiction of the Regional Administrator to issue or enforce this Consent Order, and agrees not to contest the validity of this Consent Order or its terms.

III. PARTIES BOUND

4. This Consent Order shall apply to and be binding upon EPA and shall be binding upon the Respondent, its agents, officers, directors, principals, successors and assigns. Respondent is jointly and severally responsible for carrying out all actions required of it by this Consent Order. The signatories to this Consent Order certify that they are authorized to execute and legally bind the parties they represent to this Consent Order. No change in the ownership or corporate status of the Respondent or of the Site shall alter Respondent's responsibilities under this Consent Order.

5. The Respondent shall provide a copy of this Consent Order to any subsequent owners or successors before ownership rights or stock or assets in a corporate acquisition are transferred. Respondent shall provide a copy of this Consent Order to all contractors, subcontractors, laboratories, and consultants which are retained to conduct any work performed under this Consent Order, within 14 days after the effective date of this Consent Order or the date of retaining their services, whichever is later. Respondent shall condition any such contracts upon satisfactory compliance with this Consent Order. Notwithstanding the terms of any contract, Respondent is responsible for compliance with this Consent Order and for ensuring that its employees, contractors, consultants, subcontractors, and agents involved in performing the Work under this Consent Order comply with this Consent Order.

IV. STATEMENT OF PURPOSE

6. In entering into this Consent Order, the objectives of EPA and the Respondent are: (a) to determine the nature and extent of contamination and any threat to the public health, welfare, or the environment caused by the release or threatened release of hazardous substances, pollutants or contaminants at or from the Site in connection with OU-2, by conducting a Remedial Investigation; (b) to determine and evaluate alternatives for remedial action (if any) to prevent, mitigate or otherwise respond to or remedy any release or threatened release of hazardous substances, pollutants, or contaminants at or from the Site in connection with OU-2, by conducting a Feasibility Study; and (c) to provide for the reimbursement to EPA of response and oversight costs incurred or to be incurred by EPA with respect to this Consent Order.

7. The activities conducted under this Consent Order are subject to approval by EPA and shall provide all appropriate necessary information for the Remedial Investigation/Feasibility Study ("RI/FS") for OU-2 and for a Record of Decision ("ROD") that is consistent with CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"), 40 C.F.R. Part 300. The activities conducted under this Consent Order shall be conducted in accordance with all applicable EPA guidances, policies, and procedures and any amendments thereto.

V. EPA's FINDINGS OF FACT AND CONCLUSIONS OF LAW

8. The Radiation Technology Inc. Superfund Site ("Site") comprises approximately 280-acres and is located in Rockaway Township, Morris County, New Jersey. The Site includes the areal

extent of contamination where hazardous substances have migrated or threaten to migrate.

9. The Site is divided into three distinct parcels.

10. The first parcel is a 183-acre undeveloped woodland. Upon information and belief, this area has never been developed for any purpose.

11. The second parcel consists of a 65-acre industrial park used by Thiokol Corporation as a rocket testing facility until 1969. It currently contains several small businesses such as auto mechanics and a landscaping service. Most of the buildings are unoccupied and some are deteriorating.

12. The third parcel is a 15-acre area that is separated from the rest of the property by Lake Denmark Road. It was also used by Thiokol Corporation for the administration, warehousing and controlled destruction of rocket propellants. Later, this parcel was owned and operated by Radiation Technology, Inc. ("RTI") where it manufactured "Radwood," a radiation-treated wood product, and irradiated other construction materials. RTI also irradiated food, cosmetics and medical supplies. This parcel is currently leased and operated by Ion Beam Applications, Inc. ("IBA").

13. In 1981, the Rockaway Township Health Department ("RTHD") responded to RTI worker complaints of foul odors and tastes in the water at the Site and ascertained that two on-Site wells were contaminated with volatile organic compounds ("VOCs"). Also during this time, the New Jersey Department of Environmental Protection ("NJDEP") and RTHD discovered that RTI, the owner and operator of the Site, was improperly storing and disposing of chemicals at the Site. The company was ordered to conduct removal activities to address these problems.

14. As a result of the contaminated ground water, EPA placed the Site on the National Priorities List ("NPL"), set forth at 40 C.F.R. Part 300, Appendix B, by publication in the Federal Register on September 21, 1984, 49 Fed. Reg. 37 and designated it a State-lead site.

15. The RI/FS completed in 1993 confirmed that groundwater at the Site was contaminated. During the RI, hazardous substances found in the ground water which exceeded state Ground Water Quality Standards ("GWQS") and federal Maximum Contaminant Levels ("MCLs") included: acetone; 1,1,1-trichloroethane; 1,1-dichloroethane; 1,1,2-trichloroethane; trichloroethene; 1,1-

dichloroethene; tetrachloroethene; carbon tetrachloride; chloroform; and methylene chloride. Each of these is a hazardous substance listed in 40 C.F.R. § 302.4. Freon 113 (1,1,2-trichloro-1,2,2-trifluoroethane) was also identified during the RI in the ground water. It is a hazardous substance listed pursuant to section 3001 of the Solid Waste Disposal Act, 42. U.S.C. § 6921; specifically it is listed at 40 C.F.R. § 261.31.

16. After evaluating the findings of the RI/FS, the State of New Jersey ("State") issued a ROD on May 9, 1994. The ROD selected an extraction and treatment system for ground water remediation of the most contaminated portion of the aquifer, and natural attenuation of the remainder. EPA concurred in the State's selection of the ROD by letter dated March 30, 1994.

17. The State entered into an Administrative Consent Order ("AO") with RTI and Thiokol Corporation to reimburse NJDEP costs for a portion of the RI/FS and to conduct design and remedial activities for contaminated ground water under NJDEP oversight. Pursuant to the AO and a Settlement Agreement, Thiokol Corporation paid certain monies to RTI and RTI agreed to complete the investigation and remediation of groundwater contamination at the Site. RTI began working on the remedial design soon after the ROD was signed in 1994. Under NJDEP oversight, RTI performed several pilot studies of *in situ* chemical oxidation between 1995 and 1997. The results of these studies were inconclusive and RTI resumed design for the ROD-designated remedy in 1998. The groundwater remedy was partially designed, but work was suspended in early 1999 apparently due to financial difficulties of RTI.

18. In January 2001, EPA took over as lead agency for the Site at NJDEP's request.

19. Many of the hazardous substances in the groundwater exist at levels which exceed the MCLs which have been established for such substances. MCLs are enforceable drinking water standards which have been established for certain substances under the Federal Safe Drinking Water Act and/or the New Jersey Safe Drinking Water Act.

20. This Consent Order addresses the OU-2 RI/FS to investigate potential soil contamination at the Site as well as any other potential source(s) of groundwater contamination at the Site.

21. The Site is a "facility" as defined in section 101(9) of CERCLA, 42 U.S.C. §9601(9).

22. Chemical substances and constituents thereof at the Site, sent to the Site, disposed of at the Site, and/or transported to the Site identified in Paragraph 14 are "Hazardous Substances" as defined in section 101(14) of CERCLA, 42 U.S.C. §9601(14), or constitute "any pollutant or contaminant" that may present an imminent and substantial danger to public health or welfare under section 104(a)(1) of CERCLA.

23. The presence of hazardous substances at the Site or the past, present or potential migration of hazardous substances currently located at or emanating from the Site, constitute actual and/or threatened "releases" as defined in section 101(22) of CERCLA, 42 U.S.C. §9601(22).

24. Respondent is a "person" as defined in section 101(21) of CERCLA, 42 U.S.C. §9601(21).

25. Respondent is a responsible party under sections 104, 107 and 122 of CERCLA, 42 U.S.C. §§9604, 9607 and 9622.

26. The actions required by this Consent Order are necessary to protect the public health or welfare or the environment, are in the public interest, are consistent with CERCLA and the NCP, and will expedite effective remedial action and minimize litigation.

VI. NOTICE

27. By providing a copy of this Consent Order to the State, EPA is notifying the State that this Consent Order is being issued and that EPA is the lead agency for coordinating, overseeing, and enforcing the response action required by the Consent Order.

VII. WORK TO BE PERFORMED

28. All work performed under this Consent Order shall be under the direction and supervision of qualified personnel. Within forty-five (45) days of the effective date of this Consent Order, and before the work outlined below begins, Respondent shall provide written notice to EPA of the names, titles, and qualifications of the personnel, including contractors, subcontractors, consultants and laboratories, to be used in carrying out such work. With respect to any proposed contractor, the Respondent shall demonstrate that the proposed contractor has a quality system which complies with ANSI/ASQC E4-1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology

Programs," (American National Standard, January 5, 1995), by submitting a copy of the proposed contractor's Quality Management Plan ("QMP"). The QMP should be prepared in accordance with "EPA Requirements for Quality Management Plans (QA/R-2)," (EPA/240/B-01/002, March 2001) or equivalent documentation as determined by EPA. The qualifications of the persons undertaking the work for Respondent shall be subject to EPA's review, for verification that such persons meet minimum technical background and experience requirements. The Consent Order is contingent upon Respondent's demonstration to EPA's satisfaction that Respondent is qualified to perform properly and promptly the actions set forth in the Consent Order. If EPA disapproves, in writing, of any person(s)' technical qualifications, Respondent shall notify EPA of the identity and qualifications of the replacement within twenty-one (21) days of the written notice. If EPA subsequently disapproves of the replacement(s), EPA reserves the right to terminate this Consent Order and to conduct a complete OU-2 RI/FS, and to seek reimbursement for costs and penalties from Respondent. During the course of the OU-2 RI/FS, Respondent shall notify EPA in writing of any changes in or additions to the personnel used to carry out such work, providing their names, titles, and qualifications. EPA shall have the same right to approve changes in and additions to personnel as it has hereunder regarding the initial notification.

29. Respondent shall conduct activities and submit deliverables as provided by the attached RI/FS Statement of Work ("SOW") for OU-2, which is incorporated by reference, for the development of the OU-2 RI/FS. All such work shall be conducted in accordance with CERCLA, the NCP, and EPA guidance including, but not limited to, the "Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA" (OSWER Directive # 9355.3-01), "Guidance for Data Useability in Risk Assessment" (OSWER Directive #9285.7-05) and guidances referenced therein, and guidances referenced in the SOW, as may be amended or modified by EPA. The general activities that Respondent is required to perform are identified below, followed by a list of deliverables. The tasks that Respondent must perform are described more fully in the Statement of Work and guidances. The activities and deliverables identified below shall be developed as provisions in the Work Plan and sampling and analysis plan, and shall be submitted to EPA as provided. All work performed under this Consent Order shall be in accordance with the schedules herein, and in full accordance with the standards, specifications, and other requirements of the Work Plan and sampling and analysis plan, as initially approved or modified by EPA, and as may be amended or modified by EPA from

time to time. For the purposes of this Order, "day" means calendar day unless otherwise noted in the Order.

A. Task I: RI/FS Work Plan. Within seventy-five (75) days of the effective date of this Order, Respondent shall submit to EPA a complete OU-2 RI/FS Work Plan for EPA review and approval. If EPA disapproves of or requires revisions to the OU-2 RI/FS Work Plan, in whole or in part, Respondent shall amend and submit to EPA a revised work plan which is responsive to the directions in all EPA comments, within 21 days of receiving EPA's comments. The OU-2 RI/FS Work Plan shall include those items set forth in Section II, paragraph 6 of the SOW.

B. Task II: Community Relations. Respondent shall comply with EPA requests for information or community participation pursuant to Section III of the SOW.

C. Task III: Site Characterization. Following EPA's written approval or modification of the OU-2 RI/FS Work Plan, Respondent, in accordance with Section IV. of the SOW, shall implement the provisions of this Work Plan to characterize the nature, quantity, and concentrations of hazardous substances, pollutants, or contaminants emanating from the property and present outside the boundaries of the property.

D. Task IV: Identification of Candidate Technologies Memorandum. In accordance with Section V. of the SOW, an Identification of Candidate Technologies Memorandum shall be submitted within thirty (30) days of Respondent's receipt of the last set of validated analytical results.

E. Task V: Treatability Studies. In accordance with Section VI. of the SOW and at EPA's request, Respondent shall conduct treatability studies, except where Respondent can demonstrate to EPA's satisfaction that they are not needed.

F. Task VI: Baseline Risk Assessment. Respondent shall perform a Baseline Risk Assessment for the Site in accordance with Section VII. of the SOW.

G. Task VII: Remedial Investigation Report. In accordance with Section VIII. of the SOW, Respondent shall submit to EPA a draft OU-2 RI report consistent with the OU-2 RI/FS Work Plan and the RI/FS Guidance.

H. Task VIII: Development and Screening of Remedial Alternatives. In accordance with Section IX. of the SOW,

Respondent shall develop remedial action objectives and develop and screen remedial alternatives.

I. Task IX: Feasibility Study Report. In accordance with Section X. of the SOW, within sixty (60) days of the Task VIII Presentation to EPA, Respondent shall submit a draft FS Report.

30. EPA reserves the right to comment on, modify and direct changes for all deliverables required pursuant to this Consent Order. At EPA's sole discretion, Respondent must fully correct all deficiencies and incorporate and integrate all information and comments supplied by EPA either in subsequent or resubmitted deliverables.

31. Respondent shall not proceed further with any subsequent activities or tasks until receiving EPA approval for the following deliverables: OU-2 RI/FS Work Plan, QAPP, Baseline Risk Assessment, Ecological Risk Assessment, and Treatability Testing Work Plan (if treatability study work is required to be undertaken). While awaiting EPA approval on these deliverables, Respondent shall proceed with all other tasks and activities which may be conducted independently of these deliverables, in accordance with the schedule set forth in this Consent Order.

32. Upon receipt of the draft FS report, EPA will evaluate, as necessary, the estimates of the risk to the public and environment that are expected to remain after a particular remedial alternative has been completed.

33. For all remaining deliverables not enumerated above in Paragraph 29 and the attached SOW, Respondent shall proceed with all subsequent tasks, activities and deliverables without awaiting EPA approval on the submitted deliverable. EPA reserves the right to stop Respondent from proceeding further, either temporarily or permanently, on any task, activity or deliverable at any point during the OU-2 RI/FS process.

34. In the event that Respondent amends or revises a report, plan or other submittal upon receipt of EPA comments, if EPA, in its sole discretion, subsequently disapproves of the revised submittal, or if subsequent submittals do not fully reflect EPA's directions for changes, EPA retains the right, in its sole discretion, to seek stipulated or statutory penalties; perform its own studies, complete the RI/FS (or any portion of the RI/FS) under CERCLA and the NCP, and seek reimbursement from the Respondent for its costs; and/or seek any other appropriate relief. In the event of approval, approval upon conditions, or modification of Respondent's submittal(s) by EPA, Respondent

shall proceed to take any action required by the plan, report, or other item, as approved or modified by EPA subject only to its right to invoke the Dispute Resolution procedures set forth in Section XVIII with respect to the modifications or conditions made by EPA.

35. In the event that EPA takes over some of the tasks, but not the preparation of the RI and FS Reports, Respondent shall incorporate and integrate information supplied by EPA into the final RI and FS Reports.

36. Neither failure of EPA to expressly approve or disapprove of Respondent's submission within a specified time period, nor the absence of comments, shall be construed as approval by EPA. Whether or not EPA gives express approval for Respondent's deliverables, Respondent is responsible for preparing deliverables that are in accordance with CERCLA, NCP and EPA guidance, including but not limited to, RI/FS guidance.

37. Respondent shall assure that all work performed, samples taken and analysis conducted conform to the requirements of the OU-2 RI/FS Work Plan, the EPA-approved QAPP and guidance identified therein. Respondent shall assure that field personnel used by Respondent are properly trained in the use of field equipment and in chain of custody procedures.

38. Respondent shall, prior to any off-site shipment of hazardous substances from the Site to an out-of-state waste management facility, provide written notification to the appropriate state environmental official in the receiving state and to EPA's Designated Project Coordinator of such shipment of hazardous substances. However, the notification of shipments shall not apply to any such off-site shipments when the total volume of such shipments will not exceed 10 cubic yards.

A. The notification shall be in writing, and shall include the following information, where available: (1) the name and location of the facility to which the hazardous substances are to be shipped; (2) the type and quantity of the hazardous substances to be shipped; (3) the expected schedule for the shipment of the hazardous substances; and (4) the method of transportation. Respondent shall notify the receiving state of major changes in the shipment plan, such as a decision to ship the hazardous substances to another facility within the same state, or to a facility in another state.

B. The identity of the receiving facility and state will be determined by Respondent following the award of the contract for the RI/FS. Respondent shall provide all relevant information, including information under the categories noted in Subparagraph A above, on the off-site shipments, as soon as practical after the award of the contract and before the hazardous substances are actually shipped.

VIII. NOTIFICATION AND REPORTING REQUIREMENTS

39. All reports and other documents submitted by Respondent to EPA (other than the monthly progress reports referred to below) which purport to document Respondent's compliance with the terms of this Consent Order shall be signed by a responsible corporate official(s) of the Respondent or by the Project Manager who has been delegated this responsibility by the Respondent and whose qualifications have been found by EPA to be acceptable pursuant to Paragraph 28 of this Consent Order. Notwithstanding such a delegation of responsibility, Respondent shall remain liable for the proper performance of the work required by this Consent Order. For purposes of this Consent Order, a responsible corporate official is an official who is in charge of environmental affairs.

40. Until the termination of this Consent Order, Respondent shall prepare and provide EPA with written monthly progress reports which: (1) describe the actions which have been taken toward achieving compliance with this Consent Order during the previous month; (2) include all results of sampling, tests, modeling and all other data (including raw data) received or generated by or on behalf of Respondent during the previous month in the implementation of the work required hereunder; (3) describe all actions, data and plans which are scheduled for the next two months and provide other information relating to the progress of work as is customary in the industry; (4) include information regarding percentage of completion, all delays encountered or anticipated that may affect the future schedule for completion of the work required hereunder, and a description of all efforts made to mitigate those delays or anticipated delays. These progress reports must be submitted to EPA by Respondent by the fifteenth (15th) day of every month following the effective date of this Consent Order.

41. Upon the occurrence of any event during performance of the work required hereunder which event, pursuant to Section 103 of CERCLA requires reporting to the National Response Center, Respondent shall, within twenty-four (24) hours, orally notify

the EPA Project Coordinator (or, in the event of the unavailability of the EPA Project Coordinator, the Chief of the New Jersey Remediation Branch of the Emergency and Remedial Response Division of EPA Region II), in addition to the reporting required by Section 103. Within twenty (20) days of the onset of such an event, Respondent shall furnish EPA with a written report setting forth the events which occurred and the measures taken, and to be taken, in response thereto.

42. Unless otherwise specified by EPA, all work plans, reports, notices and other documents required to be submitted to EPA under this Consent Order shall be sent by certified mail, return receipt requested, to the following addressees:

5 copies: (including 1 unbound copy)

ATTN: RTI Site Remedial Project Manager
New Jersey Remediation Branch
Emergency and Remedial Response Division
U.S. Environmental Protection Agency, Region II
290 Broadway, 19th Floor
New York, New York 10007-1866

1 copy:

ATTN: RTI Site Attorney
New Jersey Superfund Branch
Office of Regional Counsel
U.S. Environmental Protection Agency, Region II
290 Broadway, 17th Floor
New York, New York 10007-1866

2 copies:

ATTN: RTI Site Manager
Bureau of Federal Case Management
Department of Environmental Protection
401 East State Street
P.O. Box 028
Trenton, New Jersey 08625

43. Respondent shall give EPA at least fourteen (14) days advance notice of all field work or field activities to be performed by Respondent pursuant to this Consent Order unless field conditions or site specific problems prevent 14 days advance notice. In no event should Respondent give EPA less than five (5) days notice.

IX. MODIFICATION OF THE WORK PLAN

44. If at any time during the RI/FS process, Respondent identifies a need for additional data for the RI/FS, a memorandum documenting the need for such additional data shall be submitted

to the EPA Project Coordinator within twenty (20) days of identification. EPA in its discretion will determine whether the additional data will be collected by Respondent for the RI/FS and whether it will be incorporated into reports and deliverables required pursuant to this Consent Order.

45. In the event of conditions posing an immediate threat to human health or welfare or the environment, Respondent shall notify EPA and the State immediately. In the event of unanticipated or changed circumstances at the Site, Respondent shall notify the EPA Remedial Project Manager (or, in the event of the unavailability of the EPA Project Coordinator, the Chief of the New Jersey Remediation Branch of the Emergency and Remedial Response Division of EPA Region II) by telephone within twenty-four (24) hours of discovery of the unanticipated or changed circumstances. In addition to the authorities in the NCP, in the event that EPA determines that the immediate threat or the unanticipated or changed circumstances warrant changes in the OU-2 RI/FS Work Plan, EPA shall modify or amend the OU-2 RI/FS Work Plan in writing accordingly. Respondent shall implement the OU-2 RI/FS Work Plan as modified or amended.

46. EPA may determine that in addition to tasks defined in the initially approved OU-2 RI/FS Work Plan, other additional work may be necessary to accomplish the objectives of this RI/FS. EPA may require pursuant to this Consent Order that the Respondent perform these response actions in addition to those required by the initially approved OU-2 RI/FS Work Plan, including any approved modifications, if EPA determines that such actions are necessary for a complete RI/FS. Respondent shall confirm their willingness to perform the additional work in writing to EPA within ten (10) days of receipt of the EPA request or Respondent shall invoke dispute resolution. Subject to EPA resolution of any dispute pursuant to Section XVII, Respondent shall implement the additional tasks which EPA determines are necessary. The additional work shall be completed according to the standards, specifications, and schedule set forth or approved by EPA in a written modification to the OU-2 RI/FS Work Plan or written OU-2 RI/FS Work Plan supplement. EPA reserves the right to conduct the work itself at any point, to seek reimbursement from Respondent, and/or seek any other appropriate relief.

X. FINAL RI/FS, PROPOSED PLAN, PUBLIC COMMENT, RECORD OF DECISION, ADMINISTRATIVE RECORD

47. EPA retains the responsibility for the release to the public of the RI and FS reports. EPA retains responsibility for

the preparation and release to the public of the Proposed Plan and Record of Decision in accordance with CERCLA and the NCP.

48. EPA will provide Respondent with the final RI and FS Reports (to the extent that Respondent does not already have these reports), Proposed Plan and Record of Decision.

49. EPA will assemble the administrative record file for selection of the remedial action. Respondent shall submit to EPA documents developed during the course of the RI/FS upon which selection of the remedial action may be based. Respondent shall provide copies of plans, task memoranda including documentation of field modifications, recommendations for further action, quality assurance memoranda and audits, raw data, field notes, laboratory analytical reports and other reports. Respondent shall additionally submit any previous studies conducted under state, local or other federal authorities relating to selection of the response action, and all communications between Respondent and state, local or other federal authorities concerning selection of the remedial action.

XI. PROJECT COORDINATORS, OTHER PERSONNEL

50. EPA has designated the following individual as its Project Coordinator with respect to the Site:

Diego Garcia, Remedial Project Manager
New Jersey Remediation Branch
Emergency and Remedial Response Division
U.S. Environmental Protection Agency, Region II
290 Broadway, 19th Floor
New York, New York 10007-1866
(212) 637-4947

No later than fourteen (14) days after the effective date of this Consent Order, Respondent shall select their own Project Coordinator and shall notify EPA in writing of the name, address, qualifications, job title and telephone number of that Project Coordinator. He or she shall have technical expertise sufficient to adequately oversee all aspects of the work contemplated by this Consent Order. Respondent and EPA's Project Coordinators shall be responsible for overseeing the implementation of this Consent Order and shall coordinate communications between EPA and Respondent. EPA and the Respondent may change their respective Project Coordinator. Such a change shall be accomplished by notifying the other party in writing at least ten (10) days prior to the change where possible, and concurrently with the change or

as soon thereafter as possible in the event that advance notification is not possible.

51. EPA's Project Coordinator shall have the authority lawfully vested in a Remedial Project Manager and On-Scene Coordinator by the NCP. In addition, EPA's Project Coordinator shall have the authority consistent with the NCP, to halt any work required by this Consent Order, and to take any necessary response action when he/she determines that conditions at the Site may present an immediate endangerment to public health or welfare or the environment. The absence of the EPA Project Coordinator from the area under study pursuant to this Consent Order shall not be cause for the stoppage or delay of work.

52. All activities required of Respondent under the terms of this Consent Order shall be performed only by qualified persons possessing all necessary permits, licenses, and other authorizations required by applicable law.

XII. OVERSIGHT

53. During the implementation of the requirements of this Consent Order, Respondent and its contractors and subcontractors shall be available for such conferences and inspections with EPA as EPA may determine are necessary for EPA to adequately oversee the work being carried out and/or to be carried out.

54. Respondent and its employees, agents, contractors and consultants shall cooperate with EPA in its efforts to oversee Respondent's implementation of this Consent Order.

XIII. SAMPLING, ACCESS AND DATA AVAILABILITY/ADMISSIBILITY

55. If any area to which access is necessary to perform work under this Consent Order is owned in whole or in part by parties other than those bound by this Consent Order, Respondent shall obtain, or use their best efforts to obtain, access agreements from the present owner(s) within thirty (30) days of the effective date of this Consent Order. Such agreements shall provide access for EPA, its contractors and oversight officials, NJDEP and its contractors, and the Respondent or its authorized representatives, and agreements for such access shall specify that Respondent is not EPA's representative with respect to liability associated with Site activities. Copies of such agreements shall be provided to EPA upon request prior to Respondent's initiation of field activities. Respondent's best efforts shall include providing reasonable compensation to any

property owner. If access agreements are not obtained within the time referenced above, Respondent shall immediately notify EPA of their failure to obtain access. EPA may, in its sole discretion, obtain access for Respondent, perform those tasks or activities with EPA contractors, or terminate this Consent Order in the event that Respondent cannot obtain access agreements. In the event that EPA performs those tasks or activities with EPA contractors and does not terminate this Consent Order, Respondent shall reimburse EPA for all costs incurred in performing such activities and shall perform all other activities not requiring access to the given property. Respondent additionally shall integrate the results of any such tasks undertaken by EPA into its reports and deliverables. Furthermore, Respondent agrees to indemnify the United States as specified in Paragraph 95 of this Consent Order. Respondent also shall reimburse EPA for all costs and attorney fees incurred by the United States in its efforts to obtain access for Respondent.

56. At all reasonable times, EPA and its authorized representatives shall have the authority to enter and freely move about all property at the Site and off-site areas where work, if any, is being performed, for the purposes of inspecting conditions, activities, and the results of activities, records, operating logs, and contracts related to the Site or Respondent and its contractor pursuant to this Consent Order; reviewing the progress of the Respondent in carrying out the terms of this Consent Order; conducting tests as EPA or its authorized representatives deem necessary; using a camera, sound recording device or other documentary type equipment; and verifying the data submitted to EPA by the Respondent. Respondent agrees to provide EPA and its designated representatives with access to inspect and copy all records, files, photographs, documents, sampling and monitoring data, and other writings related to work undertaken in carrying out this Consent Order provided that said documents and other writings are not protected by the attorney-client privilege. All parties with access to the Site under this paragraph shall comply will all approved health and safety plans.

57. All data, records, photographs and other information created, maintained or received by Respondent or its agents, contractors or consultants in connection with implementation of the work under this Consent Order, including but not limited to contractual documents, quality assurance memoranda, raw data, field notes, laboratory analytical reports, invoices, receipts, work orders and disposal records, shall, without delay, be made available to EPA on request. EPA shall be permitted to copy all such documents and other items.

58. Upon request by EPA, or its designated representatives, Respondent shall provide EPA or its designated representatives with duplicate and/or split samples of any material sampled in connection with the implementation of this Consent Order, or allow EPA or its designated representatives to take such duplicate or split samples.

59. The Respondent may assert a claim of business confidentiality under 40 C.F.R. §2.203, covering part or all of the information submitted to EPA pursuant to the terms of this Consent Order, provided such claim is allowed by section 104(e)(7) of CERCLA, 42 U.S.C. §9604(e)(7). This claim shall be asserted in the manner described by 40 C.F.R. §2.203(b) and substantiated at the time the claim is made. Information determined to be confidential by EPA will be given the protection specified in 40 C.F.R. Part 2. If no such claim accompanies the information when it is submitted to EPA, it may be made available to the public by EPA or the State of New Jersey without further notice to the Respondent. Respondent agrees not to assert confidentiality and/or privilege claims with respect to any data related to site conditions, sampling, or monitoring.

60. Notwithstanding any other provision of this Consent Order, EPA hereby retains all of its information gathering, access and inspection authority under CERCLA, the Solid Waste Disposal Act, 42 U.S.C. §§6901-6991, and any other applicable statute or regulation.

61. For the purpose only of this Consent Order, Respondent waives any objections as to the validity of any data gathered, generated, or evaluated by EPA, the State or Respondent in the performance or oversight of the work that has been verified according to the Quality Assurance/Quality Control ("QA/QC") procedures required pursuant to this Consent Order. If Respondent objects to any other data relating to the RI/FS and which is submitted in a monthly progress report in accordance with Paragraph 40 herein, Respondent shall submit to EPA a report that identifies and explains their objections, describes their views regarding the acceptable uses of the data, if any, and identifies any limitations to the use of the data. The report must be submitted to EPA within fifteen (15) days of the monthly progress report containing the data.

XIV. OTHER APPLICABLE LAWS

62. Respondent shall comply with all laws that are applicable when performing the OU-2 RI/FS. No local, state, or federal permit shall be required for any portion of the work,

including studies, required hereunder which is conducted entirely on-Site, where such work is carried out in compliance with Section 121 of CERCLA, 42 U.S.C. §9621; however, Respondent must comply with the substantive requirements that would otherwise be included in such permits. For any work performed pursuant to this Consent Order, which is not "on-site", as defined in Sections 300.5 and 300.400(e) of the NCP, Respondent shall obtain all permits necessary under applicable laws and shall submit timely applications and requests for any such permits. This Consent Order is not, nor shall it act as, a permit issued pursuant to any federal or state statute or regulation.

XV. RECORD PRESERVATION

63. All records and documents in EPA's and Respondent's possession that relate in any way to the Site shall be preserved during the conduct of this Consent Order and for a minimum of 10 years after commencement of construction of any remedial action which is selected following the completion of the OU-2 RI/FS. The Respondent shall acquire and retain copies of all documents that relate to the Site and are in the possession of its employees, agents, accountants, contractors, or attorneys. After this 10 year period, the Respondent shall notify EPA at least 90 days before the documents are scheduled to be destroyed. If EPA requests that the documents be saved, the Respondent shall, at no cost to EPA, give the documents or copies of the documents to EPA.

XVI. COMMUNITY RELATIONS

64. Respondent shall cooperate with EPA in providing information relating to the work required hereunder to the public. To the extent requested by EPA, Respondent shall participate in the preparation of all appropriate information disseminated to the public and make presentations at, and participate in, public meetings which may be held or sponsored by EPA to explain activities at or concerning the Site.

XVII. DISPUTE RESOLUTION

65. Any significant dispute concerning activities or deliverables required under this Consent Order for which dispute resolution has been expressly provided for herein shall be resolved as follows: if the Respondent objects to an EPA notice of disapproval or determination made pursuant to this Consent Order, and if the given dispute is one for which dispute resolution has been expressly provided for herein, Respondent shall notify EPA's Project Coordinator, in writing, of their

objections within fourteen (14) days of receipt of the disapproval notice or determination. Respondent's written objections shall define the dispute, state the basis of Respondent's objections, and be sent to EPA by certified mail, return receipt requested. EPA and the Respondent shall then have an additional fourteen (14) days to reach agreement. If an agreement is not reached within the fourteen (14) days, Respondent may, within seven (7) days of the conclusion of the aforementioned 14 day period, request a determination by the Chief of the New Jersey Remediation Branch of the Emergency and Remedial Response Division, EPA Region II (hereinafter, the "Chief"). Such a request by Respondent shall be made in writing. The Chief's determination is EPA's final decision. Respondent shall proceed in accordance with EPA's final decision regarding the matter in dispute, regardless of whether Respondent agrees with the decision. If Respondent does not agree to perform or does not actually perform the work in accordance with EPA's final decision, EPA reserves the right in its sole discretion to conduct the work itself, to seek reimbursement from the Respondent of the costs of that work, to seek enforcement of the decision, to seek stipulated penalties, and/or to seek any other appropriate relief.

66. Respondent is not relieved of its obligations to perform and conduct activities and submit deliverables on the schedules which are approved by EPA and applicable to the work required pursuant to this Consent Order, while a matter is pending in dispute resolution. Stipulated penalties with respect to the disputed matter shall continue to accrue but payment shall be stayed pending resolution of the dispute as provided in Paragraph 71. Notwithstanding the stay of payment, stipulated penalties shall accrue from the first day of noncompliance with any applicable provision of this Consent Decree. In the event that the Settling Defendant does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section XVIII (Delay in Performance/Stipulated Penalties).

XVIII. DELAY IN PERFORMANCE/STIPULATED PENALTIES

67. For each day that the Respondent fails to comply with any of the requirements of this Consent Order, EPA may assess, and if so, Respondent shall pay stipulated penalties in accordance with the terms below. For purposes of this paragraph, the term "fail to comply" shall include failure by the Respondent to submit an original or revised deliverable within the time limits set forth in or established pursuant to this Consent Order, failure to revise a deliverable to fully conform with

U.S. Environmental Protection Agency, Region II
290 Broadway, 29th Floor
New York, New York 10007-1866.

70. Stipulated Penalty Amounts - Work
The following stipulated penalties shall accrue per violation per day for any noncompliance:

Penalty Per Violation Per Day	Period of Noncompliance
$1,000	1st through 7th day
$2,000	8th through 15th day
$4,000	16th through 30th day
$8,000	31st through 45th day
$12,000	46th day and beyond

71. Respondent may dispute EPA's right to the stated amount of penalties by invoking the dispute resolution procedures under Section XVII herein. Penalties shall accrue but need not be paid during the dispute resolution period. If Respondent does not prevail upon resolution, all penalties shall be due to EPA within 30 days of resolution of the dispute. If Respondent prevails upon resolution, no penalties shall be paid. Stipulated penalties shall not accrue: (1) with respect to a deficient submission under Sections VII-IX, during the period, if any, beginning on the 31st day after EPA's receipt of such submission until the date that EPA notifies Settling Defendant of any deficiency; (2) with respect to a decision by the Chief under Paragraph 65 Section XVII (Dispute Resolution), during the period, if any, beginning on the 21st day after the date that Respondent objects to an EPA notice of disapproval or determination until the date that the Chief issues a final decision regarding such dispute. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Consent Order.

72. In the event that EPA requires that corrections to an interim deliverable be reflected in the next deliverable, rather than requiring that the interim deliverable be resubmitted, any stipulated penalties which accrue for that interim deliverable shall cease to accrue on the date of such decision by EPA.

73. The stipulated penalties provisions of this Consent Order do not preclude EPA from pursuing any other remedies or sanctions which are available to EPA because of the Respondent's failure to comply with this Consent Order, including but not limited to conduct all or part of the OU-2 RI/FS by EPA. Payment

EPA's comments, and submittal of an original deliverable which is of such poor quality as to not even qualify as a bona fide submission. Stipulated penalties begin to accrue on the day that performance is due or a violation occurs, and shall continue to accrue until the noncompliance is corrected, or until EPA notifies Respondent in writing that EPA is assuming responsibility for the portion of work for which penalties are accruing, whichever occurs earlier. EPA will provide written notice of those violations for which EPA is assessing stipulated penalties; nevertheless, penalties shall accrue from the day a violation commences. Payment shall be due within thirty (30) days of receipt of a demand letter from EPA, or within 30 days of completion of dispute resolution under Section XVII (should the dispute resolution procedures be timely invoked by Respondent with respect to an EPA assessment of stipulated penalties), whichever is later.

68. Respondent shall pay interest on any unpaid balance, which shall begin to accrue at the end of the 30-day period referred to in Paragraph 67, above, at the rate established pursuant to Section 107(a) of CERCLA, 42 U.S.C. §9607(a).

69. All payments to the EPA under this Section shall indicate that the payment is for stipulated penalties, and shall be remitted via Electronic Funds Transfer ("EFT"), along with the following information, to EPA's Account with Mellon Bank, Pittsburgh, Pennsylvania, as follows:

i. Amount of Payment
ii. Title of Mellon Bank to receive the payment: EPA
iii. Account code for Mellon Bank account receiving the payment: 9108544
iv. Mellon Bank ABA Routing Number: 043000261
v. Name of Party making payment
vi. EPA Index Number: 02-2004-2033

vii. Site/Spill Identifier Number: 02/X5

To ensure that a payment is properly recorded, a letter should be sent, within one week of the EFT, which references the date of the EFT, the payment amount, that the payment is for stipulated penalties, the name of the Site, the case Index number, and the name and address of the party making payment to the United States as specified in Section VIII (Notification and Reporting Requirements) and to:

Donna Vizian, Chief
Financial Management Branch

of stipulated penalties does not alter Respondent's obligation to complete performance under this Consent Order.

XIX. FORCE MAJEURE

74. "Force majeure", for purposes of this Consent Order, is defined as any event arising from causes entirely beyond the control of the Respondent and of any entity controlling, controlled by, or under common control with Respondent, including its contractors and subcontractors, that delays the timely performance of any obligation under this Consent Order notwithstanding Respondent's best efforts to avoid the delay. The requirement that Respondent exercise "best efforts to avoid the delay" includes using best efforts to anticipate any potential force majeure event and best efforts to address the effects of any potential force majeure event (1) as it is occurring and (2) following the potential force majeure event, such that the delay is minimized to the greatest extent practicable. Examples of events that are not force majeure events include, but are not limited to, increased costs or expenses of any work to be performed under this Consent Order or the financial difficulty of Respondent to perform such work.

75. If any event occurs or has occurred that may delay the performance of any obligation under this Consent Order, whether or not caused by a force majeure event, Respondent shall notify by telephone the EPA Project Coordinator or, in his or her absence, the Chief of the New Jersey Remediation Branch of the Emergency and Remedial Response Division, EPA Region II, within forty-eight (48) hours of when Respondent knew or should have known that the event might cause a delay. Within five (5) business days thereafter, Respondent shall provide in writing: the reasons for the delay; Respondent's rationale for interpreting the circumstances as constituting a force majeure event (should that be Respondent's claim); the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to mitigate the effect of the delay; and a statement as to whether, in the opinion of Respondent, such event may cause or contribute to an endangerment to public health, welfare or the environment. Such written notice shall be accompanied by all available pertinent documentation including, but not limited to, third-party correspondence. Respondent shall exercise best efforts to avoid or minimize any delay and any effects of a delay. Failure to comply with the above

requirements shall preclude Respondent from asserting any claim of force majeure.

76. If EPA agrees that the delay or anticipated delay is attributable to force majeure, the time for performance of the obligations under this Consent Order that are directly affected by the force majeure event will be extended for a period of time, determined by EPA, not to exceed the actual duration of the delay caused by the force majeure event. An extension of the time for performance of the obligation directly affected by the force majeure event shall not, of itself, extend the time for performance of any subsequent obligation.

77. If EPA does not agree that the delay or anticipated delay has been or will be caused by a force majeure event, or if Respondent objects to the length of the extension determined by EPA pursuant to Paragraph 76, above, the issue shall be subject to the dispute resolution procedures set forth in section XVII of this Consent Order. In order to qualify for a force majeure defense, Respondent shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure event, that the duration of the delay was or will be warranted under the circumstances, that Respondent did exercise or are exercising due diligence by using their best efforts to avoid and mitigate the effects of the delay, and that Respondent complied with the requirements of Paragraph 75.

78. Should Respondent carry the burden set forth in Paragraph 77, the delay at issue shall not be deemed a violation of the affected obligation of this Consent Order.

XX. REIMBURSEMENT

79. Respondent hereby agrees to reimburse EPA for all response costs, including oversight costs, incurred by EPA with respect to the OU-2 RI/FS. EPA will periodically send billings to Respondent for the costs incurred by EPA. Those billings will be accompanied by a printout of cost data in EPA's financial management system, and by a calculation of EPA's indirect costs. EPA's costs may include, but are not limited to, costs incurred by EPA in overseeing Respondent's implementation of the requirements of this Consent Order and activities performed by EPA as part of the OU-2 RI/FS and community relations, including any costs incurred while obtaining access. Such costs will include both direct and indirect costs, including, but not limited to, time and travel costs of EPA personnel and associated indirect costs, contractor costs, cooperative agreement costs,

costs of compliance monitoring, including the collection and analysis of split samples, inspection of RI/FS activities, Site visits, discussions regarding disputes that may arise as a result of this Consent Order, review and approval or disapproval of reports, and costs of redoing any of Respondent's tasks.

80. Respondent shall, within forty-five (45) days of receipt of each such billing, remit the amount of those costs via EFT, along with the following information, to EPA's Account with Mellon Bank, Pittsburgh, Pennsylvania, as follows:

i. Amount of Payment
ii. Title of Mellon Bank to receive the payment: EPA
iii. Account code for Mellon Bank account receiving the payment: 9108544
iv. Mellon Bank ABA Routing Number: 043000261
v. Name of Party making payment
vi. EPA Index Number: CERCLA-02-2004-2033
vii. Site/Spill Identifier Number: 02/X5

To ensure that a payment is properly recorded, a letter should be sent, within one week of the EFT, which references the date of the EFT, the payment amount, that the payment is for response costs, the name of the Site, the case Index number, and the name and address of the party making payment to the United States as specified in Section VIII (Notification and Reporting Requirements) and to:

Donna Vizian, Chief
Financial Management Branch
U.S. Environmental Protection Agency, Region II
290 Broadway, 29th Floor
New York, New York 10007-1866

81. Respondent may invoke the Dispute Resolution procedures of Section XVII of this Consent Order with respect to payment demands submitted to Respondent by EPA under Paragraph 80. However, Respondent agrees to limit any disputes concerning such costs to mathematical errors and the inclusion of costs which are inconsistent with the NCP or are outside the scope of this Consent Order. Respondent shall identify any contested costs and the basis of their objection. All undisputed costs shall be remitted by Respondent in accordance with the schedule set forth above. Disputed costs shall be paid by Respondent into an escrow account while the dispute is pending. Respondent bears the burden of establishing an EPA mathematical error or the inclusion of costs which are inconsistent with the NCP or are outside the scope of this Consent Order.

82. Respondent shall pay interest on any amounts overdue under Paragraph 81. Such interest shall begin to accrue on the first day that the respective payment is overdue. Interest shall accrue at the rate of interest on investments of the Hazardous Substances Superfund, in accordance with Section 107(a) of CERCLA.

XXI. RESERVATIONS OF RIGHTS AND REIMBURSEMENT OF OTHER COSTS

83. EPA reserves the right to bring an action against Respondent (and/or any other responsible parties) under Section 107 of CERCLA for recovery of all response costs incurred by the United States at the Site that are not reimbursed by Respondent, including but not limited to, oversight costs, any costs incurred in the event that EPA performs the OU-2 RI/FS or any part thereof and any future costs incurred by the United States in connection with response activities conducted under CERCLA at the Site.

84. EPA reserves the right to bring an action against Respondent to enforce the requirements of this Consent Order, to collect stipulated penalties assessed pursuant to Section XVIII of this Consent Order, and to seek penalties pursuant to Section 109 of CERCLA, 42 U.S.C. §9609, or any other applicable provision of law.

85. Except as expressly provided in this Consent Order, each party reserves all rights and defenses it may have. Nothing in this Consent Order shall be construed to limit, in any way, EPA's response or enforcement authorities including, but not limited to, the right to seek injunctive relief, stipulated penalties, statutory penalties, and/or punitive damages.

86. Following satisfaction of the requirements of this Consent Order, Respondent shall have resolved their liability to EPA for the work performed by Respondent pursuant to this Consent Order, and EPA shall deem such work to have been performed in compliance with the NCP. Respondent is not released from liability, if any, for any response actions taken beyond the scope of this Consent Order regarding removals, other operable units, remedial design/remedial action of this operable unit, or activities arising pursuant to Section 121(c) of CERCLA.

XXII. DISCLAIMER

87. By signing and taking actions under this Consent Order, Respondent does not admit, adopt, accept, concede, or acknowledge EPA's Findings of Fact and Conclusions of Law contained herein.

Respondent reserves the right to contest such Findings of Fact and Conclusions of Law in any proceeding regarding the Site other than an action brought by the United States, including EPA, to enforce this Consent Order. Furthermore, the participation of the Respondent in this Consent Order shall not be considered an admission of liability and is not admissible in evidence against Respondent in any judicial or administrative proceeding other than a proceeding by the United States, including EPA, to enforce this Consent Order or a judgment relating to it. Except as otherwise provided in this Consent Order, Respondent does not admit liability under CERCLA or any other statute or common law and any responsibility for response costs or damages thereunder, and do not, by signing this Consent Order, waive any rights they may have. Respondent retains its rights to assert claims against other potentially responsible parties at the Site. However, the Respondent agrees not to contest the validity or the terms of this Consent Order in any action brought by the United States, including EPA, to enforce its terms.

XXIII. OTHER CLAIMS

88. In entering into this Consent Order, Respondent waives any right to seek reimbursement under Section 106(b) of CERCLA for the costs of the OU-2 RI/FS. Respondent also waives any right to present a claim under Sections 111 or 112 of CERCLA or under any other provision of law for costs incurred in the performance of this Consent Order. This Consent Order does not constitute any decision or preauthorization of funds under Section 111(a)(2) of CERCLA. Respondent further waives all other statutory and common law claims against EPA, including, but not limited to, contribution and counterclaims, relating to or arising out of conduct of the OU-2 RI/FS.

89. Except as expressly provided in this Consent Order, nothing in this Consent Order shall constitute or be construed as a release from any claim, cause of action or demand in law or equity against any "person," as that term is defined in Section 101(21) of CERCLA, not a signatory to this Consent Order for any liability it may have arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous substances, pollutants, or contaminants found at, taken to, or taken from the Site. Nothing herein shall constitute a finding that Respondent is the sole responsible party with respect to the release and threatened release of hazardous substances at or from the Site.

90. Nothing in this Consent Order shall be construed to create any rights in, or grant any cause of action to, any person

not a Party to this Consent Order. The preceding sentence shall not be construed to waive or nullify any rights that any person not a signatory to this Consent Order may have under applicable law. Respondent expressly reserves any and all rights (including, but not limited to, any right to contribution), defenses, claims, demands, and causes of action which Respondent may have with respect to any matter, transaction, or occurrence relating in any way to the Site against any person not a Party hereto.

91. Respondent shall bear its own costs and attorneys fees.

XXIV. FINANCIAL ASSURANCE, INSURANCE, AND INDEMNIFICATION

92. Respondent shall establish and maintain a financial instrument or trust account or other financial mechanism acceptable to EPA, funded sufficiently to perform the work and any other obligations required under this Consent Order, including a margin for cost overruns. Within forty-five (45) days after the effective date of this Consent Order, Respondent shall fund the financial instrument or trust account sufficiently to perform the work required under this Consent Order projected for the period beginning with the effective date of this Consent Order through the date of EPA's approval of Respondent's certification pursuant to paragraph 94, below. Financial assurance provided under this Section may include:

a. a surety bond unconditionally guaranteeing payment and/or performance of the Work;

b. one or more irrevocable letters of credit, payable to or at the direction of EPA, issued by financial institution(s) acceptable in all respects to EPA equaling the total estimated cost of the Work;

c. a trust fund administered by a trustee acceptable in all respects to EPA;

d. a policy of insurance issued by an insurance carrier acceptable in all respects to EPA, which ensures the payment and/or performance of the Work;

e. a corporate guarantee to perform the Work provided by one or more parent corporations or subsidiaries of Respondent, or by one or more unrelated corporations that have a substantial business relationship with the Respondent; including a demonstration that any such

company satisfies the financial test requirements of 40 C.F.R. Part 264.143(f); and/or

f. a corporate guarantee to perform the Work by the Respondent, including a demonstration that Respondent satisfies the requirements of 40 C.F.R. Part 264.143(f).

93. If at any time the net worth of the financial instrument or trust account is insufficient to perform the work and other obligations under this Consent Order for the upcoming quarter, Respondent shall provide written notice to EPA within seven (7) days after the net worth of the financial instrument or trust account becomes insufficient. The written notice shall describe why the financial instrument or trust account is funded insufficiently and explain what actions have been or will be taken to fund the financial instrument or trust account adequately.

94. No later than 15 days before commencing any on-site Work, Respondent shall secure, and shall maintain for the duration of this Order, comprehensive general liability insurance and automobile liability insurance with limits of $5 million dollars, combined single limit, naming the EPA as an additional insured. Within the same period, Respondent shall provide EPA with certificates of such insurance and shall resubmit such certificates each year on the anniversary of the Effective Date. Respondent shall also retain copies of the insurance policies in its files and upon request from EPA, shall provide EPA with copies of such insurance policies. In accordance with paragraph 59, Respondent may assert a claim of business confidentiality with respect to copies of insurance policies. In addition, for the duration of the Order, Respondent shall satisfy, or shall ensure that its contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing the Work on behalf Respondent. If Respondent demonstrates by evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering the same risks but in a lesser amount, then, with respect to that contractor or subcontractor, Respondent need provide only that portion of the insurance described above which is not maintained by the contractor or subcontractor.

95. Respondent agrees to indemnify and hold the United States Government, its agencies, departments, agents, and employees harmless from any and all claims and causes of action

arising from or on account of acts or omissions of Respondent, its employees, agents, servants, receivers, successors, or assignees, or any persons acting on behalf of Respondent, including, but not limited to, firms, corporations, parent, subsidiaries and contractors, in carrying out activities under this Consent Order. The United States Government or any agency or authorized representative thereof shall not be held as a party to any contract entered into by Respondent in carrying out activities under this Consent Order.

96. Neither the United States Government nor any agency thereof shall be liable for any injuries or damages to persons or property resulting from acts or omissions by Respondent or Respondent's officers, directors, employees, agents, contractors, consultants, receivers, trustees, successors or assigns in carrying out any action or activity pursuant to this Consent Order.

XXV. EFFECTIVE DATE AND SUBSEQUENT MODIFICATION

97. This Consent Order shall be effective on the date of receipt of a copy hereof by counsel to Respondent.

98. This Consent Order may be amended by mutual agreement of EPA and Respondent. Amendments shall be in writing and shall be effective when signed by EPA. EPA Project Coordinators do not have the authority to sign amendments to this Consent Order.

99. No informal advice, guidance, suggestions, or comments by EPA regarding reports, plans, specifications, schedules, and any other writing submitted by the Respondent will be construed as relieving the Respondent of its obligations to obtain such formal approval as may be required by this Consent Order. Any deliverables, plans, technical memoranda, reports (other than progress reports), specifications, schedules and other documents required to be submitted to EPA pursuant to this Consent Order shall, upon approval by EPA, be deemed to be incorporated in and an enforceable part of this Consent Order.

XXVI. TERMINATION AND SATISFACTION

100. This Consent Order shall terminate when Respondent demonstrated in writing and certify to the satisfaction of EPA that all activities required under this Consent Order, including any additional work, payment of costs in accordance with Section XX of this Consent Order, and payment of any stipulated penalties demanded by EPA, have been performed and EPA has approved the certification in writing. This notice shall not, however,

terminate Respondent's obligation to comply with any of Respondent's remaining obligations under this Consent Order, including record preservation and the payment of any costs specified in Section XX of this Consent Order which have not yet, at that time, been paid by Respondent.

101. The certification referred to in paragraph 100, above, shall be signed by a responsible official representing Respondent. Such representative shall make the following attestation:

> "I certify that the information contained in or accompanying this certification is true, accurate, and complete."

For purposes of this Consent Order, a responsible official is a corporate official who is in charge of environmental affairs.

FOR THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY:

Kathleen Callahan

Jane M. Kenny
Regional Administrator
U.S. Environmental Protection Agency
Region II

9/28/04

Date

ATTACHMENT I

STATEMENT OF WORK FOR A REMEDIAL INVESTIGATION AND FEASIBILITY STUDY FOR OPERABLE UNIT TWO RADIATION TECHNOLOGY INC. SUPERFUND SITE ROCKAWAY TOWNSHIP, MORRIS COUNTY, NEW JERSEY

I. INTRODUCTION

A. The purpose of this remedial investigation/feasibility study (RI/FS) is to investigate the nature and extent of contamination for operable unit two at the Radiation Technology Inc. Superfund Site (Site) and develop and evaluate potential remedial alternatives. The RI and FS are interactive and may be conducted concurrently so that the data collected in the RI influences the development of remedial alternatives in the FS, which in turn affects the data needs and the scope of treatability studies, if needed.

B. As part of this RI/FS, Respondent will investigate the nature and extent of contamination at the Site related to the storage, assembly, and testing of rocket motors, and related items. (Rocket Motor Business). Respondent will also investigate potential contamination at the Site that Respondent contends is not attributable to the Rocket Motor Business. Respondent will prepare a RI/FS workplan and work cooperatively with EPA to develop an appropriate sampling plan that adequately characterizes the nature and extent of contamination at the Site.

C. This RI/FS effort will utilize, to the extent practicable, existing data generated from previous investigative and interim remedial activities conducted at the Site. This includes, but is not limited to, the work performed by Acres International under contract with the New Jersey Department of Environmental Protection (NJDEP) in the late 1980's and early 1990's.

D. The Respondent shall conduct this RI/FS and shall produce draft RI and FS reports that are in accordance with this Statement of Work (SOW), the Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (U.S. EPA, Office of Emergency and Remedial Response, October 1988), and any updates thereto. The RI/FS Guidance describes the report format and the required report content. The Respondent shall furnish all necessary personnel, materials, and services needed for, or incidental to, the performance of the RI/FS, except as otherwise specified in the administrative order.

E. At the completion of the RI/FS, EPA will be responsible for the selection of the remedy for the Site and will document the selection in a Record of Decision (ROD). The remedial action alternative selected by EPA will meet the cleanup standards specified in CERCLA Section 121. That is, the selected remedial action will be protective of human health and the environment, will be in compliance with, or include a waiver of, applicable or relevant and appropriate requirements of other laws, will be cost-effective, will utilize permanent

solutions and alternative treatment technologies or resource recovery technologies, to the maximum extent practicable, and will address the statutory preference for treatment as a principal element. The final RI/FS report, as adopted by EPA, and the baseline risk assessment will, with the administrative record, form the basis for the selection of the remedy for the Site and will provide the information necessary to support the development of the ROD.

F. As specified in CERCLA Section 104(a)(1), as amended by SARA, EPA will provide oversight of Respondent's activities throughout the RI/FS. Respondent shall support EPA's initiation and conduct of activities related to the implementation of oversight activities.

II. TASK I - RI/FS WORK PLAN

1. The RI/FS is conducted to gather sufficient data and information necessary to characterize the nature and extent of contamination in order to support the selection of a remedy for the Site that will reduce or eliminate risks to human health or the environment associated with contamination at the Site.

2. The RI/FS achieves its objectives by determining the horizontal and vertical distribution and concentration of hazardous substances in the soil, sediment and surface water and their association with the Site.

3. Before planning RI/FS activities, all existing data for the Site will be thoroughly compiled and reviewed by the Respondent.

4. The Respondent shall conduct a visit to the Site during the scoping phase of the project to assist in developing a conceptual understanding of sources and areas of contamination as well as potential exposure pathways and receptors at the Site. During the visit to the Site, the Respondent should observe the Site's physiography, hydrology, geology, and demographics, as well as natural resource, ecological and cultural features. This information will be utilized to better scope the project and to determine the extent of additional data necessary to characterize the Site, better define potential ARARs, and narrow the range of preliminarily identified remedial alternatives.

5. Once the Respondent has collected and analyzed existing data and conducted a visit to the Site, the specific project scope will be planned. Project planning activities include those tasks described below as well as identifying data needs, developing a work plan, designing a data collection program, and identifying health and safety protocols.

6. RI/FS Work Plan and Schedule. Within seventy-five (75) days of the effective date of this Order, the Respondent shall submit to EPA an RI/FS Work Plan for the completion of the RI/FS. The RI/FS Work Plan should include, among other things, a detailed schedule for RI/FS activities at the Site. The schedule shall provide for the completion of the RI/FS within eighteen (18) months of EPA's approval of the RI/FS Work Plan. If EPA disapproves, or requires revisions to, the RI/FS Work Plan in whole or in part, the Respondent shall amend and submit to

EPA a revised Work Plan which is responsive to the directions in all EPA comments, within twenty-one (21) days of receiving EPA's comments. The RI/FS Work Plan shall include:

A. Sampling and Analysis Plan (SAP), which shall contain a schedule and rationale of the RI sampling activities to be conducted by the Respondent and shall contain the following elements:

i. A detailed description of the sampling, analysis, and monitoring that shall be performed during the RI/FS phase, consistent with this Order. At a minimum, the SAP shall provide the following:

a. A plan to investigate the extent of surface water and sediment contamination at the Site, excluding Lake Denmark, as generally depicted in the attached figure;

b. A plan to investigate the extent of soil contamination at the Site, as generally depicted in the attached figure;

c. A plan to conduct a baseline risk assessment and ecological evaluation of the Site;

d. A plan to investigate the surrounding soils and contents of the above-ground storage tanks and tank saddle pads that were not investigated previously at the Site;

e. A plan to assess and determine naturally-occurring background concentrations of selected inorganics, i.e. beryllium, at the Site;

ii. All sampling, analysis, data assessment, and monitoring shall be performed in accordance with the "Region II CERCLA Quality Assurance Manual," Revision 1, EPA Region 2, dated October 1989, and any updates thereto, or an alternate EPA-approved test method, and the guidelines set forth in this Order. All testing methods and procedures shall be fully documented and referenced to established methods or standards.

B. Quality Assurance/Quality Control Project Plan (QAPP), which shall be prepared consistent with "EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations" (EPA QA/R-5, October 1998, and any updates thereto), and which shall include the following elements:

i. The QAPP shall ~~also~~ specifically include the following items:

a. An explanation of the way(s) the sampling, analysis, testing, and monitoring will produce data for the RI/FS phase;

b. A detailed description of the sampling, analysis, and testing to be performed, including sampling methods, analytical and testing methods, sampling locations and frequency of sampling;

c. A map depicting sampling locations; and

d. A schedule for performance of specific tasks.

ii. In the event that additional sampling locations, testing, and analyses are utilized or required, the Respondent shall submit to EPA an addendum to the QAPP for approval by EPA.

iii. The QAPP shall also address the following elements:

Project Management

a. Title and Approval Sheet
b. Table of Contents and Document Control Format
c. Distribution List
d. Project/Task Organization and Schedule
e. Problem Definition/Background
f. Project/Task Description
g. Quality Objectives and Criteria for Measurement Data
h. Special Training Requirements and Certification
i. Documentation and Records

Measurement/Data Acquisition

j. Sampling Process Design
k. Sampling Methods Requirements
l. Sample Handling and Custody Requirements
m. Analytical Methods Requirements
n. Quality Control Requirements
o. Instrument/Equipment Testing, Inspection, and Maintenance Requirements
p. Instrument Calibration and Frequency
q. Inspection/Acceptance Requirements for Supplies and Consumables
r. Data Acquisition Requirement (Non-Direct Measurements)
s. Data Management

Assessment/Oversight

t. Assessments and Response Actions

u. Reports to Management

Data Validation and Usability

v. Data Review, Validation, and Verification Requirements
w. Validation and Verification Methods
x. Reconciliation with Data Quality Objectives

iv. In order to provide quality assurance and maintain quality control with respect to all samples to be collected, the Respondent shall ensure the following:

a. Quality assurance and chain-of-custody procedures shall be performed in accordance with standard EPA protocol and guidance, including the "Region II CERCLA Quality Assurance Manual," Revision 1, EPA Region 2, dated October 1989, and any updates thereto, and the guidelines set forth in this Order.

b. The laboratory to be used must be specified. If the laboratory participates in the Contract Laboratory Program (CLP) for the analysis to be performed for this investigation, then project-specific Performance Evaluation (PE) samples will not be required, as CLP laboratories run EPA PEs on a quarterly basis. If the proposed laboratory does not participate in the CLP for the analyses required, PE samples must be analyzed to demonstrate the capability to conduct the required analysis prior to being approved for use. Once a non-CLP laboratory has been selected, the laboratory should submit a copy of their Laboratory Quality Assurance Program Plan (LQAPP) to EPA for review and approval.

For any analytical work performed, including that done in a fixed laboratory, in a mobile laboratory, or in on-site screening analyses, Respondent must submit to EPA a "Non-CLP Superfund Analytical Services Tracking System" form for each laboratory utilized during a sampling event, within thirty (30) days after acceptance of the analytical results. Upon completion, such documents shall be submitted to the EPA Project Coordinator, with a copy of the form and transmittal letter to:

Regional Sample Control Center Coordinator
U.S. EPA Region 2
Division of Environmental Science & Assessment
2890 Woodbridge Avenue, Bldg. 209, MS-215
Edison, NJ 08837

c. The laboratory utilized for analyses of samples must perform all analyses according to accepted EPA methods as documented in the "Contract Lab Program Statement of Work for Organic Analysis, (OLM04.2)" or the latest revision, and the "Contract Lab Program Statement of Work for Inorganic Analysis, (ILM04.0)" or the latest revision, or other EPA approved methods.

d. Unless indicated otherwise in the approved QAPP, upon receipt from the laboratory, all data shall be validated.

e. Submission of the validation package (checklist, report and Form I containing the final data) to EPA, prepared in accordance with the provisions of Subparagraph g., below.

f. Assurance that all analytical data that are validated as required by the QAPP are validated according to the procedures stated in the "EPA Region II Contract Lab Program Organics Data Review and Preliminary Review (SOP #HW-6, Revision 11)," dated June 1996, or the latest revision, and the "Evaluation of Metals Data for the Contract Laboratory Program (SOP #HW-2, Revision 11)," dated January 1992 or the latest revision, or EPA-approved equivalent procedures. Region 2 Standard Operating Procedures are available at: http://www.epa.gov/region2/desa/hsw/sops.htm

g. Unless indicated otherwise in the QAPP, the Respondent shall require deliverables equivalent to CLP data packages from the laboratory for analytical data. Upon EPA's request, the Respondent shall submit to EPA the full documentation (including raw data) for this analytical data. EPA reserves the right to perform an independent data validation, data validation check, or qualification check on generated data.

h. The Respondent shall make reasonable efforts to insert a provision in their contract(s) with the laboratory utilized for analyses of samples, which will require granting access to EPA personnel and authorized representatives of the EPA for the purpose of ensuring the accuracy of laboratory results related to the Site.

C. A Health and Safety Plan (HSP), which shall conform to 29 CFR §1910.120, "OSHA Hazardous Waste Operations Standards," and the EPA guidance document, "Standard Operating Safety Guidelines," (OSWER, 1988) and any updates thereto.

7. Following approval or modification by EPA, the Work Plan shall be deemed to be incorporated into this Order by reference.

III. TASK II - COMMUNITY RELATIONS

The Respondent will develop a Site-specific community relations plan and make revisions to this plan as necessary and in accordance with EPA guidance and the NCP. To the extent requested by EPA, the Respondent shall provide information relating to the work required hereunder to the public. As requested by EPA, the Respondent shall participate in the preparation of all appropriate information disseminated to the public; participate in public meetings, which may be held or sponsored by EPA, to explain activities at or concerning the Site; and procure a suitable location for public meetings, as needed.

IV. TASK III - SITE CHARACTERIZATION (RI/FS Guidance, Chapter 3)

Following EPA's written approval or modification of the RI/FS Work Plan, the Respondent shall implement the provisions of the RI/FS Work Plan to characterize the nature, quantity, and concentrations of hazardous substances, pollutants, or contaminants in connection with the Site. The Respondent shall provide EPA with validated analytical data within forty-five (45) days of each sampling activity, in the electronic format required by EPA at the time of submission, showing the location, medium and results. Within seven (7) days of completion of field activities, the Respondent shall so advise EPA in writing. Within forty-five (45) days of submission to EPA of the final set of validated field data, the Respondent shall submit to EPA a Site Characterization Summary Report. Within fourteen (14) days after the Respondent's submittal of the Site Characterization Summary Report, the Respondent shall make a presentation to EPA on the findings of the Site Characterization Summary Report and discuss EPA's preliminary comments and concerns associated with the Site Characterization Summary Report. If EPA disapproves of or requires revisions to the Site Characterization Summary Report, in whole or in part, the Respondent shall amend and submit to EPA a revised Site Characterization Summary Report that is responsive to the directions in all of EPA's written comments within twenty-one (21) days of receipt of EPA's comments.

A. As part of the RI, the Respondent shall perform the activities described in this task, including the preparation of site characterization summaries and RI report. The overall objective of site characterization is to describe areas of the Site that may pose a threat to human health or the environment. This is accomplished by first determining the Site's physiography, geology, and hydrology. Surface and subsurface pathways of migration will be defined. The Respondent shall identify the sources of contamination and define the nature, extent, and volume of the sources of contamination, including their physical and chemical constituents as well as their concentrations at incremental locations to background in the affected media. Using this information, contaminant fate and transport is then determined and projected.

B. During this phase of the RI/FS, the QAPP, and health and safety plan are implemented. Field data are collected and analyzed to provide the information required to accomplish the objectives of the study. The Respondent shall notify EPA at least two weeks in advance of the field work regarding the planned dates for field activities. The Respondent shall demonstrate that the laboratory and type of laboratory analyses that will be utilized during characterization of the Site meet the specific QA/QC requirements and the Data Quality Objectives ("DQOs") of the Site's investigation as specified in the QAPP. In view of the unknown conditions of the Site, activities are often iterative, and to satisfy the objectives of the RI/FS it may be necessary for the Respondent to modify the work specified in the initial work plan. In addition to the deliverables below, the Respondent shall provide a monthly progress report and participate in meetings with EPA at major milestones in the RI/FS process.

1. Field Investigation (3.2)

The field investigation includes the gathering of data to define the Site's physical and biological characteristics, sources of contamination, and the nature and extent of contamination at the Site. These activities shall be performed by the Respondent in accordance with the RI/FS work plan and QAPP. At a minimum, this shall address the following:

a. Implement and Document Field Support Activities (3.2.1)

The Respondent shall initiate field support activities following approval of the RI/FS Work Plan and QAPP. Field support activities may include scheduling, and procuring equipment, office space, laboratory services, and/or contractors. The Respondent may initiate other time-critical field support activities, such as obtaining access to the Site, prior to approval of the RI/FS work plan and QAPP. The Respondent shall provide EPA with at least 7 (seven) days notice prior to initiating field support activities so that EPA may adequately schedule oversight tasks. The Respondent shall also notify EPA in writing upon completion of field support activities.

b. Investigate and Define Site Physical and Biological Characteristics (3.2.2)

The Respondent shall collect data on the physical and biological characteristics of the Site and its surrounding areas including the physical physiography, geology, and hydrology, and specific physical characteristics identified in the work plan. This information will be ascertained through a combination of physical measurements, observations, and sampling efforts and will be utilized to define potential transport pathways and human and ecological receptor populations. In defining the physical characteristics of the Site, the Respondent shall also obtain sufficient engineering data for the projection of contaminant fate and transport, and development and screening of remedial action alternatives, including information to assess treatment technologies.

c. Define Sources of Contamination (3.2.3)

The Respondent shall locate each source of contamination. For each location, the areal extent and depth of contamination shall be determined by sampling at incremental depths on a sampling grid. The physical characteristics and chemical constituents and their concentrations will be determined for all known and discovered sources of contamination. The Respondent shall conduct sufficient sampling to define the boundaries of the contaminant sources to the level established in the QA/QC plan and DQOs.

Defining the source of contamination will include analyzing the potential for contaminant release (e.g., long term leaching from soil), contaminant mobility and persistence, and characteristics important for evaluating remedial actions, including information to assess treatment technologies.

d. Describe the Nature and Extent of Contamination (3.2.4)

The Respondent shall gather information to describe the nature and extent of contamination as a final step during the field investigation. To describe the nature and extent of contamination, the Respondent shall utilize the information on the Site's physical and biological characteristics and sources of contamination to give a preliminary estimate of the contaminants that may have migrated. The Respondent shall then implement an iterative monitoring program and any study program identified in the RI/FS Work Plan (which includes the QAPP) such that by using analytical techniques sufficient to detect and quantify the concentration of contaminants, the migration of contaminants through the various media at the Site can be determined. In addition, the Respondent shall gather data for calculations of contaminant fate and transport. This process is continued until the area and depth of contamination are known to the level of contamination established in the QA/QC plan and DQOs. The Respondent shall use the information on the nature and extent of contamination to determine the level of risk presented by the Site in consultation with EPA. The Respondent shall use this information to help to determine aspects of the appropriate remedial action alternatives to be evaluated.

2. Data Analysis (3.4)

Evaluate Site Characteristics (3.4.1)

The Respondent shall analyze and evaluate the data to describe: (1) physical and biological characteristics at the Site, (2) contaminant source characteristics, (3) nature and extent of contamination and (4) contaminant fate and transport. Results of the Site's physical characteristics, source characteristics, and extent of contamination analyses are utilized in the analysis of contaminant fate and transport. The evaluation will include the actual and potential magnitude of releases from the sources, and horizontal and vertical spread of contamination as well as mobility and persistence of contaminants. Where modeling is appropriate, such models shall be identified to EPA in a technical memorandum prior to their use. All data and programming, including any proprietary programs, shall be made available to EPA together with a sensitivity analysis. The Respondent shall agree to discuss any data gaps identified by the EPA and then collect data that is necessary to complete the baseline risk assessment. (See "Guidance for Data Useability in Risk Assessment" - Publication # 9285.7-09A, April 1992.) Also, this evaluation shall include any information relevant to characteristics of the Site necessary for evaluation in the baseline risk assessment of the need for remedial action and for the development and evaluation of remedial alternatives. (See Risk Evaluation of Remedial Alternatives (Part C) - OSWER Directive 9285.7-01C, December 1991.) Analysis of data collected for characterization of the Site will meet the DQOs developed in the QA/QC plan (or revised during the RI).

3. Data Management Procedures (3.5)

The Respondent shall consistently document the quality and validity of field and laboratory data compiled during the RI.

a. Document Field Activities (3.5.1)

Information gathered during characterization of the Site will be consistently documented and adequately recorded by the Respondent in well maintained field logs and laboratory reports. The method(s) of documentation must be specified in the work plan and QAPP. Field logs or dedicated field log-books must be utilized to document observations, measurements, and significant events that have occurred during field activities. Laboratory reports must document sample custody, analytical responsibility, analytical results, adherence to prescribed protocols, nonconformity events, corrective measures, and/or data deficiencies.

b. Maintain Sample Management and Tracking (3.5.2; 3.5.3.)

The Respondent shall maintain field reports, sample shipment records, analytical results, and QA/QC reports to ensure that only validated analytical data are reported and utilized in the evaluation of remedial alternatives. Analytical results developed under the work plan will not be included in the site characterization reports for the Site unless

accompanied by, or cross- referenced to, a corresponding QA/QC report. In addition, the Respondent shall establish a data security system to safeguard chain-of-custody forms and other project records to prevent loss, damage, or alteration of project documentation.

4. Preliminary Site Characterization Summary (3.6.2)

After completing field sampling and analysis, the Respondent shall prepare a concise Site Characterization Summary Report. This report will review the investigative activities that have taken place, and describe and display data from the Site documenting the location and characteristics of surface and subsurface features and contamination at the Site including the affected medium, location, physical state, concentration of contaminants and quantity. In addition, the location, dimensions, physical condition and varying concentrations of each contaminant throughout each source and the extent of contaminant migration through each of the affected media will be documented. The Site Characterization Summary Report for the Site will provide EPA with a preliminary reference for the development of the risk assessment, and evaluation of the development and screening of remedial alternatives and the refinement and identification of ARARs.

V. TASK IV - IDENTIFICATION OF CANDIDATE TECHNOLOGIES (4.2)

Schedule: An Identification of Candidate Technologies Memorandum shall be submitted by the Respondent within thirty (30) days of Respondent's submission to the EPA of the last set of validated analytical results. The candidate technologies identified shall include innovative treatment technologies (as defined in the RI/FS Guidance) where appropriate. The listing of candidate technologies will cover the range of technologies required for alternatives analysis (Task 8.2). If EPA disapproves of or requires revisions to the technical memorandum identifying candidate technologies, in whole or in part, the Respondent shall amend and submit to EPA a revised technical memorandum identifying candidate technologies which is responsive to the directions in all EPA comments, within fourteen (14) days of receiving EPA's written comments.

VI. TASK V - TREATABILITY STUDIES; AS NECESSARY

Treatability testing will be performed by the Respondent, at EPA's request, to assist in the detailed analysis of alternatives. In addition, if applicable, testing results and operating conditions will be used in the detailed design of the selected remedial technology. The following activities will be performed by the Respondent.

A. Conduct Literature Survey and Determine the Need For Treatability Testing (4.2.2)

The Respondent shall conduct a literature survey to gather information on performance, relative costs, applicability, removal efficiencies, operation and maintenance (O&M) requirements, and implementability of candidate technologies. If practical candidate technologies have not been sufficiently demonstrated, or cannot be adequately evaluated, or cannot be adequately evaluated for this Site on the basis of available information, treatability testing will be conducted. Where it is determined by EPA that treatability testing is required, and unless the Respondent can demonstrate to EPA's satisfaction that they are not needed, the Respondent shall submit a Statement of Work to EPA outlining the steps and data necessary to evaluate and initiate the treatability testing program.

B. Evaluate Treatability Studies (4.2.3)

Once a decision has been made to perform treatability studies, the Respondent and EPA will decide on the type of treatability testing to use (e.g., bench versus pilot). Because of the time required to design, fabricate, and install pilot scale equipment as well as perform testing for various operating conditions, the decision to perform pilot testing should be made as early in the process as possible to minimize potential delays of the FS. To assure that a treatability testing program is completed on time, and with accurate results, the Respondent shall either submit a separate treatability testing work plan or an amendment to the original site work plan for the Site for EPA review and approval.

C. Treatability Testing and Deliverables (4.3)

The deliverables that will be required if treatability testing is conducted, in addition to the memorandum identifying candidate technologies, shall include a treatability testing statement of work, a work plan, a sampling and analysis plan, and a final treatability evaluation report. EPA may also require a treatability study health and safety plan, where appropriate.

If EPA determines that treatability testing is required and so notifies the Respondent in writing, the Respondent shall, within twenty-one (21) days thereafter, submit to EPA a Treatability Testing Statement of Work.

D. Treatability Testing Work Plan (4.3.2)

Within thirty (30) days of submission of the Treatability Testing Statement of Work, the Respondent shall submit a Treatability Testing Work Plan, including a schedule. Upon its approval by EPA, said schedule shall be deemed incorporated into this Order by reference. If EPA disapproves of or requires revisions to the

Treatability Testing Work Plan, in whole or in part, the Respondent shall amend and submit to EPA a revised Treatability Testing Work Plan which is responsive to the directions in all EPA comments, within twenty-one (21) days of receiving EPA's comments.

The Respondent shall prepare a treatability testing work plan or amendment to the original site work plan for the Site for EPA review and approval describing the background of the Site, remedial technology(ies) to be tested, test objectives, experimental procedures, treatability conditions to be tested, measurements of performance, analytical methods, data management and analysis, health and safety, and residual waste management. The DQOs for treatability testing should be documented as well. If pilot scale treatability testing is to be performed, the pilot-scale work plan will describe pilot plant installation and start-up, pilot plant operation and maintenance procedures, operating conditions to be tested, a sampling plan to determine pilot plant performance, and a detailed health and safety plan. If testing is to be performed off-site for the Site, the Respondent shall address all necessary permitting requirements to the satisfaction of appropriate authorities.

E. Treatability Study QAPP (4.3.3)

Within thirty (30) days of the identification by EPA of the need for a separate or revised QAPP, and HSP, the Respondent shall submit to EPA a revised QAPP and HSP as appropriate. If EPA disapproves of or requires revisions to the revised QAPP and HSP, in whole or in part, the Respondent shall amend and submit to EPA a revised treatability study QAPP and HSP, which is responsive to the directions in all EPA comments, within thirty (30) days of receiving EPA's comments.

If the original QAPP is not adequate for defining the activities to be performed during the treatability test, a separate treatability study QAPP or amendment to the original QAPP for the Site will be prepared by the Respondent for EPA review and approval. Task 1 of this Statement of Work provides additional information on the requirements of the QAPP.

F. Treatability Study Health and Safety Plan (4.3.4)

If the original health and safety plan is not adequate for defining the activities to be performed during the treatment tests, a separate or amended health and safety plan will be developed by the Respondent. Task 1 of this statement of work provides additional information on the requirements of the health and safety plan. EPA does not "approve" the treatability study health and safety plan.

G. Treatability Study Evaluation Report (4.3.5)

Within thirty (30) days of completion of any treatability testing, the Respondent shall submit a Treatability Study Evaluation Report to EPA. If EPA disapproves of or requires revisions to the Treatability Study Evaluation Report, in whole or in part, the Respondent shall amend and submit to EPA a revised Treatability Study Evaluation Report which is responsive to the directions in all EPA comments, within (30) days of receiving EPA's comments.

Following completion of treatability testing, the Respondent shall analyze and interpret the testing results in a technical report to EPA. Depending on the sequences of activities, this report may be a part of the RI/FS report or a separate deliverable. The report will evaluate each technology's effectiveness, implementability, cost and actual results as compared with predicted results. The report will also evaluate full scale application of the technology, including a sensitivity analysis identifying the key parameters affecting full-scale operation.

VII. TASK VI - BASELINE RISK ASSESSMENT

The Respondent shall prepare a Baseline Risk Assessment for the Site which shall be incorporated by the Respondent into the RI. The Respondent shall provide EPA with the following deliverables:

A. Baseline Human Health Risk Assessment (BHHRA)

1. Actual and potential cancer risks and non-cancer hazards to human health shall be identified and characterized in accordance with CERCLA, the NCP, and EPA guidances including, but not limited to, the RI/FS Guidance, "Land Use in the CERCLA Remedy Selection Process" (OSWER Directive No. 9355.7-04) and the definitions and provisions of "Risk Assessment Guidance for Superfund ("RAGS")," Volume 1, "Human Health Evaluation Manual," (December 1989) (EPA/540/1-89/002). Other EPA guidance to be used in the development of risk assessments is provided in Appendix 1A .

2. Representative contaminants and associated concentrations in media including soil, sediment, and surface water for the BHHRA shall be determined utilizing all current and historically available media-specific analytical data generated during the RI/FS.

3. Memorandum on Exposure Scenarios and Assumptions. Within 45 days after approval of the RI/FS work plan, the Respondent shall submit a memorandum describing the exposure scenarios and assumptions, taking into account for the BHHRA the present and reasonably anticipated future land use of the Site. The memorandum should include appropriate text describing the conceptual site model and exposure routes of concern for

the Site, and include a completed RAGS Part D Table 1. This table shall describe the pathways that will evaluated in the BHHRA, the rationale for their selection, and a description of those pathways that will not be evaluated. In addition, the Memorandum shall include a completed RAGS Part D Table 4 describing the exposure pathway parameters with appropriate references to EPA's 1991 Standard Default Assumptions and updated guidance developed by EPA. If EPA disapproves, or requires revisions to, the memorandum, in whole or in part, such disapproval or required revisions shall be provided in writing with reasons for the disapproval or directions for revisions to make the submittal approvable. The Respondent shall amend and submit to EPA a revised memorandum that is responsive to the directions in all EPA comments, within 14 days of receiving EPA's comments.

4. Pathway Analysis Report (PAR). The Respondent shall prepare and submit a PAR within forty-five (45) days after receipt of the last set of validated data. The PAR shall be developed in accordance with OSWER Directive 9285.7-01D-1 dated December 17, 1997 (or more recent version), entitled, "*Risk Assessment Guidelines for Superfund Part D*" and other appropriate guidance in Appendix 1A and updated thereto. The PAR shall contain all the information necessary for a reviewer to understand how the risks at the Site will be assessed. The PAR will build on the Memorandum on Exposure Scenarios and Assumptions (see 3 above) describing the risk assessment process and how the risk assessment will be prepared. The PAR shall include completed RAGS Part D Tables 2, 3, 5, and 6 as described below. The PAR must be reviewed and approved by EPA prior to the submission of the draft BHHRA.

5. Chemicals of Concern (COPC). The PAR shall contain all the information necessary for a reviewer to understand how the risks at the Site will be evaluated.

   i. Based on the results of the Site Characterization Summary Report the Respondent shall list the hazardous substances present in all sampled media (e.g.,4 soils, sediment, etc.) and the contaminants of potential concern ("COPCs") as described in RAGS Part A.

   ii. Table 2 - Selection of COPCs. Representative contaminants and associated concentrations in sample media for the PAR shall be determined utilizing all currently available media-specific validated analytical data generated during the RI/FS. The selection of COPCs shall follow RAGS Part A and before chemicals are deleted as COCs they shall be evaluated against the residential PRGs from Region IX. The COPCs shall be presented in completed RAGS Part D Table 2 format.

iii. Table 3 - Media Specific Exposure Point Concentrations. Using the chemicals selected in Table 2, this Table shall summarize the Exposure Point Concentrations for all COPCs for the various media. The calculation of the Exposure Point Concentration shall follow the 1992 Guidance Document on the calculation of the 95% Upper Confidence Limit (UCL) on the Mean. In those cases where the 95% UCL exceeds the mean the maximum concentration shall be used as the EPC.

iv. Tables 5 and 6 - Toxicological Information. This section of the PAR shall provide the toxicological data (e.g., Cancer Slope Factors, Reference Doses, Reference Concentrations, Weight of Evidence for Carcinogens, and adjusted dermal toxicological factors where appropriate) for the chemicals of potential concern. The toxicological data shall be presented in completed RAGS Part D Tables 5 and 6. The source of data in order of priority are: EPA's Integrated Risk Information System (IRIS), and other sources as recommended by EPA's National Center for Environmental Assessment. To facilitate a timely completion of the PAR, the Respondent shall submit a list of chemicals for which IRIS values are not available to EPA as soon as identified thus allowing EPA to facilitate obtaining this information from EPA's National Center for Environmental Assessment.

If EPA disapproves, or requires revisions to, the PAR, in whole or in part, the Respondent shall amend and submit to EPA a revised PAR that is responsive to the directions in all of EPA's written comments within twenty-one (21) days of receipt of EPA's comments.

6. Baseline Human Health Risk Assessment of the RI Report. Within forty-five (45) days of EPA's approval of the PAR, the Respondent shall submit to EPA a Draft BHHRA for inclusion in the RI. The submittal shall include completed RAGS Part D Tables 7 through 10 summarizing the calculated cancer risks and non-cancer hazards and appropriate text in the risk characterization with a discussion of uncertainties and critical assumptions (e.g., background concentrations and conditions). The Respondent shall perform the BHHRA in accordance with the approach and parameters described in the approved Memorandum of Exposure Scenarios and Assumptions and the PAR describe above. Text and tables from these previously approved reports shall be included in the appropriate sections of the BHHRA.

If EPA disapproves or requires revisions to the section, in whole or in part, such disapproval or required revision shall be provided in writing with

reasons for the disapproval or directions for revisions to make the submittal approvable. Respondent shall amend and submit to EPA a revised report that is responsive to the directions in all EPA comments, within 30 days of receiving EPA's comments. The approved BHHRA shall be incorporated into the RI report.

B. Baseline Ecological Risk Assessment

1. Within forty-five (45) days after receipt of the last set of validated data, the Respondent shall submit a Screening-Level Ecological Risk Assessment (SLERA) in accordance with current Superfund ecological risk assessment guidance (Ecological Risk Assessment Guidance for Superfund, Process for Designing and Conducting Ecological Risk Assessments [ERAGS], USEPA, 1997 [EPA/540-R-97-006]). The SLERA shall include a comparison of the maximum contaminant concentrations in each media of concern to appropriate conservative ecotoxicity screening values, and should use conservative exposure estimates. EPA will review the SLERA and determine whether a full Baseline Ecological Risk Assessment is required.

   If EPA disapproves of or requires revisions to the SLERA, in whole or in part, such disapproval or required revisions shall be provided in writing with reasons for the disapproval or directions for revisions to make the submittal approvable. The Respondent shall amend and submit to EPA a revised SLERA that is responsive to the directions in all EPA comments, within 14 days of receiving EPA's comments.

2. If EPA determines that a full Baseline Ecological Risk Assessment (BERA) is required, and so notifies the Respondent in writing, the Respondent shall, within twenty-one (21) days thereafter, submit a Scope of Work outlining the steps and data necessary to perform the BERA, including any amendments to the RI/FS Work Plan required to collect additional relevant data. If EPA disapproves, or requires revisions to, the BERA Scope of Work, in whole or in part, the Respondent shall amend and submit to EPA a revised BERA Scope of Work that is responsive to the directions in all of EPA's written comments within fourteen (14) days of receipt of EPA's comments. The BERA Scope of Work shall identify any RI/FS Work Plan amendments or addenda, including establishment of a schedule for review and approval of additional field work.

3. The Respondent shall notify EPA in writing within seven (7) days of completion of all field activities associated with the BERA, as identified in the BERA Scope of Work and performed under the approved RI/FS Work Plan addenda. Within forty-five (45) days of completion of the final set of BERA-related validated data, the Respondent shall submit a draft Baseline

Ecological Risk Assessment Report to EPA. Actual and potential ecological risks shall be identified and characterized in accordance with CERCLA, the NCP, and EPA guidances including, but not limited to, "Ecological Risk Assessment Guidance for Superfund, Process for Designing and Conducting Ecological Risk Assessments," (1997) (EPA/540-R-97-006), ERAGS, dated June 5, 1997 (or most recent guidance). The Respondent shall submit to EPA a baseline ecological assessment section for inclusion in the RI Report. If EPA disapproves, or requires revisions to, the updated ecological assessment, in whole or in part, such disapproval or required revisions shall be provided in writing with reasons for the disapproval or directions for revisions to make the submittal approvable. The Respondent shall amend and submit to EPA a final, updated ecological assessment that is responsive to the directions in all EPA comments. The Respondent shall evaluate and assess the risk to the environment posed by site contaminants. As part of this subtask, the Respondent shall perform the following activities:

a. Draft Baseline Ecological Risk Assessment Report. The Respondent shall prepare a draft Ecological Risk Assessment Report that addresses the following:

i. Hazard Identification (sources). The Respondent shall review available information on the hazardous substances present at the site and identify the major contaminants of concern.

ii Dose-Response Assessment. The Respondent shall identify and select contaminants of concern based on their intrinsic toxicological properties.

iii. Characterization of Site and Potential Receptors. The Respondent shall identify and characterize environmental exposure pathways.

iv Select Chemicals, Indicator Species, and End Points. In preparing the assessment, the Respondent shall select representative chemicals, measurement endpoints on which to concentrate, and assessment endpoints (indicator species (species which are especially sensitive to environmental contaminants).

v. Exposure Assessment. The exposure assessment shall identify the magnitude of actual or environmental exposures, the frequency and duration of these exposures, and the routes by which receptors are exposed. The

exposure assessment shall include an evaluation of the likelihood of such exposures occurring and shall provide the basis for the development of acceptable exposure levels.

vi. Toxicity Assessment/Ecological Effects Assessment. The toxicity and ecological effects assessment shall address the types of adverse environmental effects associated with chemical exposures, the relationships between magnitude of exposures and adverse effects, and the related uncertainties for contaminant toxicity.

vii. Risk Characterization. During risk characterization, chemical-specific toxicity information, combined with quantitative and qualitative information from the exposure assessment, shall be compared to measured levels of contaminant exposure levels and the levels predicted through environmental fate and transport modeling. These comparisons shall determine whether concentrations of contaminants at or near the Site are affecting or could potentially affect the environment.

viii. Identification of Limitations/ Uncertainties. The Respondent shall identify critical assumptions (e.g., background concentrations and conditions) and uncertainties in the report.

ix. Site Conceptual Model. Based on contaminant identification, exposure assessment, toxicity assessment, and risk characterization, the Respondent shall develop a conceptual model of the Site.

b. Final Ecological Risk Assessment Report. Within 30 days of receiving EPA's comments on the Draft Ecological Assessment Report, the Respondent shall amend and submit to EPA a final report which is responsive to the directions in all EPA comments.

VIII. TASK VII - REMEDIAL INVESTIGATION REPORT

The Respondent shall prepare a Remedial Investigation (RI) report that accurately establishes the site characteristics such as the contaminated media, extent of contamination, and the physical boundaries of the contamination. This report shall summarize results of field activities to characterize the Site, sources of contamination, and the fate and transport of contaminants. Pursuant to this objective, the Respondent shall obtain only the minimum essential amount of

detailed data necessary to determine the key contaminants movement and extent of contamination. The key contaminants must be selected based on persistence and mobility in the environment and the degree of hazard. The Respondent shall use existing standards and guidelines and other criteria accepted by EPA as appropriate for the situation that will be used to evaluate effects on human receptors who may be exposed to the key contaminants above appropriate standards or guidelines.

The RI report shall be written in accordance with the "Guidance for Conducting Remedial Investigations/Feasibility Studies under CERCLA," OSWER Directive 9355.3-01, October 1988, Interim Final (or latest revision) and "Guidance for Data Usability in Risk Assessment," (EPA/540/G-90/008), September 1990 (or latest revision) and consistent with the "Region II RI Report Guidelines."

The Respondent shall refer to the RI/FS Guidance for an outline of the report format and contents. Following comment by EPA, the Respondent shall prepare a final RI report which satisfactorily addresses EPA's comments.

A. Draft Remedial Investigation Report

In accordance with the schedule in the approved RI/FS work plan, the Respondent shall submit a draft RI report that is consistent with the "Region II RI Report Guidelines."

B. Final Remedial Investigation Report

Within 30 days of receiving EPA's comments on the Draft RI Report, the Respondent shall amend and submit to EPA a final report which is responsive to the directions in all EPA comments.

IX. TASK VIII- DEVELOPMENT AND SCREENING OF REMEDIAL ALTERNATIVES

Concurrent with the RI site characterization task, the Respondent shall begin to develop and evaluate a range of appropriate waste management options that at a minimum ensure protection of human health and the environment. The development and screening of remedial alternatives shall develop an appropriate range of waste management options that will be evaluated. This range of alternatives should include options in which treatment is used to reduce the toxicity, mobility, or volume of wastes, but varying in the types of treatment, the amount treated, and the manner in which long-term residuals or untreated wastes are managed; options involving containment with little or no treatment; options involving both treatment and containment; and a no-action alternative. The following activities will be performed as a function of the development and screening of remedial alternatives.

1. Development and Screening of Remedial Alternatives (5.2)

The Respondent will begin to develop and evaluate a range of appropriate waste management options that at a minimum ensure protection of human health and the environment, concurrent with the RI site characterization task.

i. Develop General Response Actions (5.2.2)

The Respondent will develop general actions for each medium of interest defining containment, treatment, excavation, pumping, or other actions, singly or in combination, to satisfy the remedial action objectives.

ii. Identify areas or volumes of media (5.2.3)

The Respondent will identify areas or volumes of media to which general response actions may apply, taking into account requirements for protectiveness as identified in the remedial action objectives. The chemical and physical characterization of the Site will also be taken into account.

iii. Assemble and document alternatives (5.2.6)

The Respondent will assemble selected representative technologies into alternatives for each affected medium or operable unit. Together, all of the alternatives will represent a range of treatment and containment combinations that will address either the Site or the operable unit(s) as a whole. A summary of the assembled alternatives and their related action-specific ARARs will be prepared by the Respondent for inclusion in a technical memorandum. The reasons for eliminating alternatives during the preliminary screening process must be specified.

iv. Refine alternatives (5.2.7)

The Respondent will refine the remedial alternatives to identify contaminant volume addressed by the proposed process and sizing of critical unit operations as necessary. Sufficient information will be collected for an adequate comparison of alternatives. PRGs for each chemical in each medium will also be modified as necessary to incorporate any new risk assessment information presented in the baseline risk assessment report. Additionally, action-specific ARARs will be updated as the remedial alternatives are refined.

2. Conduct and Document Screening Evaluation of Each Alternative (5.2.8)

The Respondent may perform a final screening process based on short and long term aspects of effectiveness, implementability, and relative cost. Generally, this screening process is only necessary when there are many feasible alternatives available for detailed analysis. If necessary, the screening of alternatives will be conducted to assure that only the alternatives with the most favorable composite evaluation of all factors are retained for further analysis. As appropriate, the screening will preserve the range of treatment and containment alternatives that was initially

developed. The range of remaining alternatives will include options that use treatment technologies and permanent solutions to the maximum extent practicable.

3. Development and Screening of Alternatives Deliverables (5.3)

Within thirty (30) days after EPA's approval of the Baseline Risk Assessment, or within 30 days after EPA's approval of the Respondent's Treatability Study Evaluation report (if treatability studies are undertaken), whichever is later, the Respondent shall: (1) make a presentation to EPA identifying the remedial action objectives and summarizing the development and preliminary screening of remedial alternatives, and (2) prepare and submit a Development and Screening of Remedial Alternatives technical memorandum summarizing the work performed in, and the results of, each task above, including an alternatives array summary. The memorandum shall also summarize the reasoning employed in screening, arraying alternatives that remain after screening, and identifying the action-specific ARARs for the alternatives that remain after screening. If required by EPA's comments, these remaining alternatives will be modified by the Respondent to assure that a complete and appropriate range of viable alternatives are identified and considered in the detailed analysis. This deliverable will document the methods, rationale, and results of the alternatives screening process.

4. Detailed Analysis of Remedial Alternatives

The detailed analysis will be conducted by the Respondent to provide EPA with the information needed to allow for the selection of a remedy for the Site. This analysis is the final task to be performed by the Respondent during the FS.

1. Detailed Analysis of Alternatives (6.2)

   The Respondent shall conduct a detailed analysis of alternatives which will consist of an analysis of each option against a set of nine evaluation criteria and a comparative analysis of all options using the same evaluation criteria as a basis for comparison.

2. Apply Nine Criteria and Document Analysis (6.2.1-6.2.4)

   The Respondent shall apply nine evaluation criteria to the assembled remedial alternatives to ensure that the selected remedial alternative will be protective of human health and the environment; will be in compliance with, or include a waiver of, ARARS; will be cost-effective; will utilize permanent solutions and alternative treatment technologies, or resource recovery technologies, to the maximum extent practicable; and will address the statutory preference for treatment as a principal element. The evaluation criteria include: (1) overall protection of human health and the environment; (2) compliance with ARARs; (3) long-term effectiveness and permanence; (4) reduction of toxicity, mobility, or volume; (5) short-term effectiveness; (6) implementability; (7) cost; (8) state (or support agency) acceptance; and (9) community acceptance.

(Note: criteria 8 and 9 are considered after the RI/FS Report has been released to the general public). For each alternative, the Respondent should provide: (1) a description of the alternative that outlines the waste management strategy involved and identifies the key ARARs associated which each alternative, and (2) a discussion of the individual criterion assessment. If the Respondent does not have direct input on criteria (8) state (or support agency) acceptance and (9) community acceptance, these will be addressed by EPA.

3. Compare Alternatives Against Each Other and Document the Comparison of Alternatives (6.2.5; 6.2.6)

The Respondent shall perform a comparative analysis between the remedial alternatives. That is, each alternative will be compared against the others using the evaluation criteria as a basis of comparison. Identification and selection of the preferred alternative are reserved by EPA. The Respondent shall prepare a technical memorandum summarizing the results of the comparative analysis.

4. Detailed Analysis Deliverables (6.3)

The Respondent shall submit a draft FS report to EPA for review and approval. Once EPA's comments have been addressed by the Respondent to EPA's satisfaction, the final FS report may be bound with the final RI report.

X. TASK IX - FEASIBILITY STUDY REPORT (6.4)

A. The Respondent shall prepare a Feasibility Study (FS) Report consisting of a detailed analysis of alternatives and a cost-effectiveness analysis, in accordance with the National Contingency Plan (NCP), 40 CFR Part 300, as well as the most recent guidance. Within sixty (60) days of the Task VIII presentation to EPA, the Respondent shall submit to EPA a Draft FS report which reflects the findings in the approved Baseline Risk Assessment. The Respondent shall refer to the RI/FS Work Plan and the RI/FS Guidance and the SOW for report content and format. Within fourteen (14) days of submitting the draft FS report, the Respondent shall make a presentation to EPA at which the Respondent shall summarize the findings of the draft FS report and discuss EPA's preliminary comments and concerns associated with the draft FS report. If EPA disapproves of or requires revisions to the draft FS report, in whole or in part, the Respondent shall amend and submit to EPA a revised draft FS report which is responsive to the directions in EPA's comments, within twenty-one (21) days of receiving EPA's written comments.

B. The Respondent shall prepare a draft FS report for EPA review and comment. The FS report shall contain the following:

- Summary of Feasibility Study objectives

- Summary of remedial objectives
- Discussion of general response actions
- Identification and screening of remedial technologies
- Remedial alternatives description
- Detailed analysis of remedial alternatives
- Summary and conclusions

The Respondent's technical feasibility considerations shall include the careful study of any problems that may prevent a remedial alternative from mitigating site problems. Therefore, the site characteristics from the RI must be kept in mind as the technical feasibility of the alternative is studied. Specific items to be addressed are reliability (operation over time), safety, operation and maintenance, ease with which the alternative can be implemented, and time needed for implementation.

ATTACHMENT A

REFERENCES FOR CITATION

The following list, although not comprehensive, comprises many of the regulations and guidance documents that apply to the RI/FS process:

The National Hazardous Substance and Oil Pollution Contingency Plan, 40 CFR 300 *et seq.*

"Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA," U.S. EPA, Office of Emergency and Remedial Response, October 1988, OSWER Directive No. 9355.3-01

"Interim Guidance on Potentially Responsible Party Participation in Remedial Investigation and Feasibility Studies," U.S. EPA, Office of Waste Programs Enforcement, Appendix A to OSWER Directive No. 9355.3-01.

"Guidance on Oversight of Potentially Responsible Party Remedial Investigations and Feasibility Studies," U.S. EPA, Office of Waste Programs Enforcement, OSWER Directive No. 9835.3.

"A Compendium of Superfund Field Operations Methods," Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, EPA/540/P-87/001a, August 1987, OSWER Directive No. 9355.0-14.

"EPA NEIC Policies and Procedures Manual," May 1978, revised November 1984, EPA-330/9-78-001-R.

"Data Quality Objectives for Remedial Response Activities," U.S. EPA, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, EPA/540/G-87/003, March 1987, OSWER Directive No. 9335.0-7B.

"Guidelines and Specifications for Preparing Quality Assurance Project Plans," U.S. EPA, Office of Research and Development, Cincinnati, OH, QAMS-004/80, December 29,1980.

"EPA Requirements for QAPPs for Environmental Data Operations," U.S. EPA, Office of Emergency and Remedial Response, QA/R-5, October 1998.

"Interim Guidelines and Specifications for Quality Assurance Project Plans," U.S. EPA, Office of Emergency and Remedial Response, QAMS-005/80, December 1980.

"Users Guide to the EPA Contract Laboratory," U.S. EPA, Sample Management Office, August 1982.

"Interim Guidance with Applicable or Relevant and Appropriate Requirements," U.S. EPA, Office of Emergency and Remedial Response, July 9, 1987, OSWER Directive No. 9234.0-05.

"CERCLA Compliance with Other Laws Manual," Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, August 1988 (draft), OSWER Directive No. 9234.1-01 and -02.

"Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites," U.S. EPA, Office of Emergency and Remedial Response, (draft), OSWER Directive No. 9283.1-2.

"Draft Guidance on Superfund Decision Documents," U.S. EPA, Office of Emergency and Remedial Response, March 1988, OSWER Directive No. 9355.-02

"Risk Assessment Guidance for Superfund - Volume I Human Health Evaluation Manual" (Part A), EPA/540/1-89/002

"Risk Assessment Guidance for Superfund - Volume I Human Health Evaluation Manual" (Part B), EPA/540/R-92/003.

"Risk Assessment Guidance for Superfund - Volume II Environmental Evaluation Manual," March 1989, EPA/540/1-89/001.

"Guidance for Data Useability in Risk Assessment," October, 1990, EPA/540/G-90/008.

"Performance of Risk Assessments in Remedial Investigation/ Feasibility Studies (RI/FSs) Conducted by Potentially Responsible Parties (PRPs)," August 28, 1990, OSWER Directive No.9835.15.

"Risk Evaluation of Remedial Alternatives" (Part C), December 1991, OSWER Directive 9285.7-01C.

"Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions," April 22, 1991, OSWER Directive No. 9355.0-30.

"Supplemental Guidance to RAGS: Calculating the Concentration Term," May 1992, OSWER Directive 9285.7-081.

"Health and Safety Requirements Employed in Field Activities," U.S. EPA, Office of Emergency and Remedial Response, July 12, 1981, EPA Order No. 1440.2.

OSHA Regulations in 29 CFR 1910.120 (Federal Register 45654, December 19, 1986).

"Interim Guidance on Administrative Records for Selection of CERCLA Response Actions," U.S. EPA, Office of Waste Programs Enforcement, March 1, 1989, OSWER Directive No. 9833.3A.

"Community Relations in Superfund: A Handbook," U.S. EPA, Office of Emergency and Remedial Response, June 1988, OSWER Directive No. 9230.03B.

"Community Relations During Enforcement Activities And Development of the Administrative Record," U.S. EPA, Office of Programs Enforcement, November 1988, OSWER Directive No. 9836.0-1a.

HUMAN HEALTH RISK ASSESSMENT GUIDANCE DOCUMENTS

Superfund Risk Assessment Guidance

USEPA, 1989, Risk Assessment Guidance for Superfund (RAGS); Volume I Human Health Evaluation Manual Part A. OERR. EPA/540/1-89/002. Available at: http://www.epa.gov/superfund/programs/risk/ragsa/index.htm

USEPA, 1990, Risk Assessment Guidance for Superfund (RAGS); Volume I, Human Health Evaluation Manual, (Part B, Development of Risk-Based Preliminary Remediation Goals) OERR, EPA/540/R-92/003. Available at: www.epa.gov/superfund/programs/risk/ragsb/index.htm

USEPA, 1991. Risk Assessment Guidance for Superfund (RAGS); Volume I, Human Health Evaluation Manual (Part C, Risk Evaluation of Remedial Alternatives), OSWER Directive 9285.7-01C, December 1991. Available at: www.epa.gov/superfund/programs/risk/ragsc/index.htm

USEPA, 1996. Revised Policy on Performance of Risk Assessments During Remedial Investigation/Feasibility Studies (RI/FS) Conducted by Potentially Responsible Parties, OSWER Directive No. 9340.1-02 mistakenly numbered 9835.15c.

USEPA, 1997. Risk Assessment Guidance for Superfund (RAGS); Volume I, Human Health Evaluation Manual, Part D., OERR, Interim Publication No. 9285.7-01D. Available at: www.epa.gov/superfund/programs/risk/ragsd/index.htm

USEPA, 1999. Risk Assessment Guidance for Superfund (RAGS). Volume I, Community Involvement in Superfund Risk Assessments. OSWER 9285.7-01, EPA540-R-98-042, PB-99-96303, March 1999. Available at: www.epa.gov/superfund/programs/risk/ragsa/c1_ra.pdf.

Exposure Factors

USEPA, 1991, RAGS Volume I: Human Health Evaluation Manual Supplemental Guidance. Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.

USEPA, 1992. Supplemental Guidance to RAGS: Calculating the Concentration Term. OSWER 9285.7-081. May 1992.

USEPA, 1997. Exposure Factors Handbook - Final, Office of Health and Environmental Assessment, Washington, D.C. Available at: http://cfpub.epa.gov/ncea/cfm/exposfac.cfm?ActType=default

Dermal Exposure

USEPA, 1992. Dermal Exposure Assessment: Principles and Applications. OSWER. EPA/600/8-91/011B. January. Available at: http://oaspub.epa.gov/eims/eimsapi.dispdetail?deid=12188

USEPA, 1999. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual: (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim Guidance, OSWER Directive 9285.7-10. Please contact Region II risk assessors to discuss any potential updates to the factors in this guidance.

Toxicity and Chemical Specific Guidance

USEPA, current version. Integrated Risk Information System (IRIS); On-line Service. Available at: www.epa.gov/iris).

USEPA, 1993. Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons. EPA/600/R-93/C89. July 1993.

USEPA, 1996. PCBs: Cancer dose-response assessment and application to environmental mixtures. EPA/600/P-96/001A. Available at: http://www.epa.gov/ORD/WebPubs/pcb/

USEPA. 1997. Health Effects Assessment Summary Tables (HEAST), FY'97 Update. U. S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. EPA/540-F-97-036. July 1997.

Risk Characterization Guidance

USEPA 1995. Memorandum from Carole Browner on Risk Characterization, U.S. EPA, February 22, 1995. Available at: http://www.epa.gov/ordntrnt/ORD/spc/2riskchr.html.

USEPA, 1995. EPA Risk Characterization Program. Memo from Administrator Carol Browner dated March 21, 1995. Available at: http://www.epa.gov/osp/spc/rccover.htm

Risk Assessment Guidelines and Policies

USEPA, 1986. Risk Assessment Guidelines for Mutagenicity Risk Assessment. 51 Federal Register 34006, September 24, 1986.

USEPA, 1986. Risk Assessment Guidelines for Chemical Mixtures 51 Federal Register 34014, September 24, 1986.

USEPA, 1992. Risk Assessment Guidelines for Exposure Assessment. Federal Register. Available at: http://www.epa.gov/nceawww1/exposure.htm

USEPA, 1995. Neurotoxicity Cancer Guidelines. Federal Register. 60 FR 52-32-52056, October 4, 1995.

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USEPA, 1996. Proposed Guidelines for Carcinogen Risk Assessment. EPA/600/P-92/003C, April 1996. Available at: http://www.epa.gov/ORD/WebPubs/carcinogen.

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USEPA, 1992. Final Guidance on Data Useability in Risk Assessment (Part A), OSWER Directive 9285.7-09A., June 1992. Available at: www.epa.gov/programs/risk/datause/parta.htm.

USEPA, 1992. Guidance for Data Useability in Risk Assessment (Part B), OSWER Directive 9285.7-09B, August 1992. Available at: www.epa.gov/programs/risk/datause/partb.html.

USEPA, 1993. Data Quality Objectives Process for Superfund, Interim Final Guidance. OSWER Publication 93559-01, EPA 540-R-93-071.

Air

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USEPA, 1993. Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities. OSWER Directive #9355.4-12.

USEPA, 1996. Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soils. Available at: http://www.epa.gov/superfund/programs/lead/products/adultpb.pdf

USEPA, 1994. Technical Support Document for the Integrated Exposure Uptake Biokinetic Model for Lead in Children (December 1994) [NTIS #PB94_963505, OSWER #9285.7_22]. Software available at: http://www.epa.gov/oerrpage/superfund/programs/lead/products/tsd.pdf

USEPA, 1996. Soil Screening Guidance, Fact Sheet. EPA 540/F-95/041. Available at: www.epa.gov/superfund/resources/soil/index.htm#fact.

USEPA, 1996. Soil Screening Guidance: User's Guide. EPA Doc. # 540/R-96/018, July 1996. Available at: www.epa.gov/superfund/resources/soil/

USEPA, 1996. Final Soil Screening Guidance, and Associated Appendices. May 17, 1996. Soil Screening Guidance User's Guide, EPA 540/R-96/018. Available at: www.epa.gov/superfund/resources/soil/

USEPA, 1996. Soil Screening Guidance: Technical Background Document (TBD). EPA Document Number: EPA/540/R-95/128, July 1996
Available at: www.epa.gov/superfund/resources/soil/.

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USEPA, 1998. Proposed TSCA §403 Soil Lead Hazard and OSWER's Lead-in-Soils Policy. EPA 540-F-98-061, OSWER 9200.4-29, PB 99-963211. Memorandum from Lynn Goldman and

Tim Fields to Regional Administrators. Available at:
http://www.epa.gov/superfund/programs/lead/prods.htm

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Monte Carlo Analysis

USEPA, 1997. Policy For Use Of Probabilistic Analysis In Risk Assessment at the U.S. Environmental Protection Agency. Guiding Principles for Monte Carlo Analysis - (EPA Document No. EPA/630/R-97/001, March 1997). Available at:
http://www.epa.gov/osp/spc/probpol.htm

USEPA, 1997. Guiding Principles for Monte Carlo Analysis. EPA/630/R-97/001, March 1997. Available at: http://www.epa.gov/ncea/raf/montecar.pdf

Children's Health Issues

USEPA, 1995. New Policy on Evaluating Health Risks to Children. From Administrator Carol Browner to: Assistant Administrators, General Counsel, Inspector General, Associate Administrators and Regional Administrators. October 20, 1995. Available at:
http://www.epa.gov/osp/spc/memo1020.htm

USEPA, 1995. Policy on Evaluating Health Risks to Children. Available at:
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Additional Guidance:

USEPA, 1997. Special Report on Environmental Endocrine Disruption: An Effects Assessment and Analysis. EPA/630/R-96/012. February,1997. Available at: http://www.epa.gov/ORD/WebPubs/endocrine/

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Chemical Specific Documents of Interest

Chemical specific documents for mercury, lead, and perchlorate are available at: http://cfpub.epa.gov/ncea/cfm/healthri.cfm

EPA homepage for human health risk assessment documents are available at: http://www.epa.gov/superfund/programs/risk/toolthh.htm#GG.

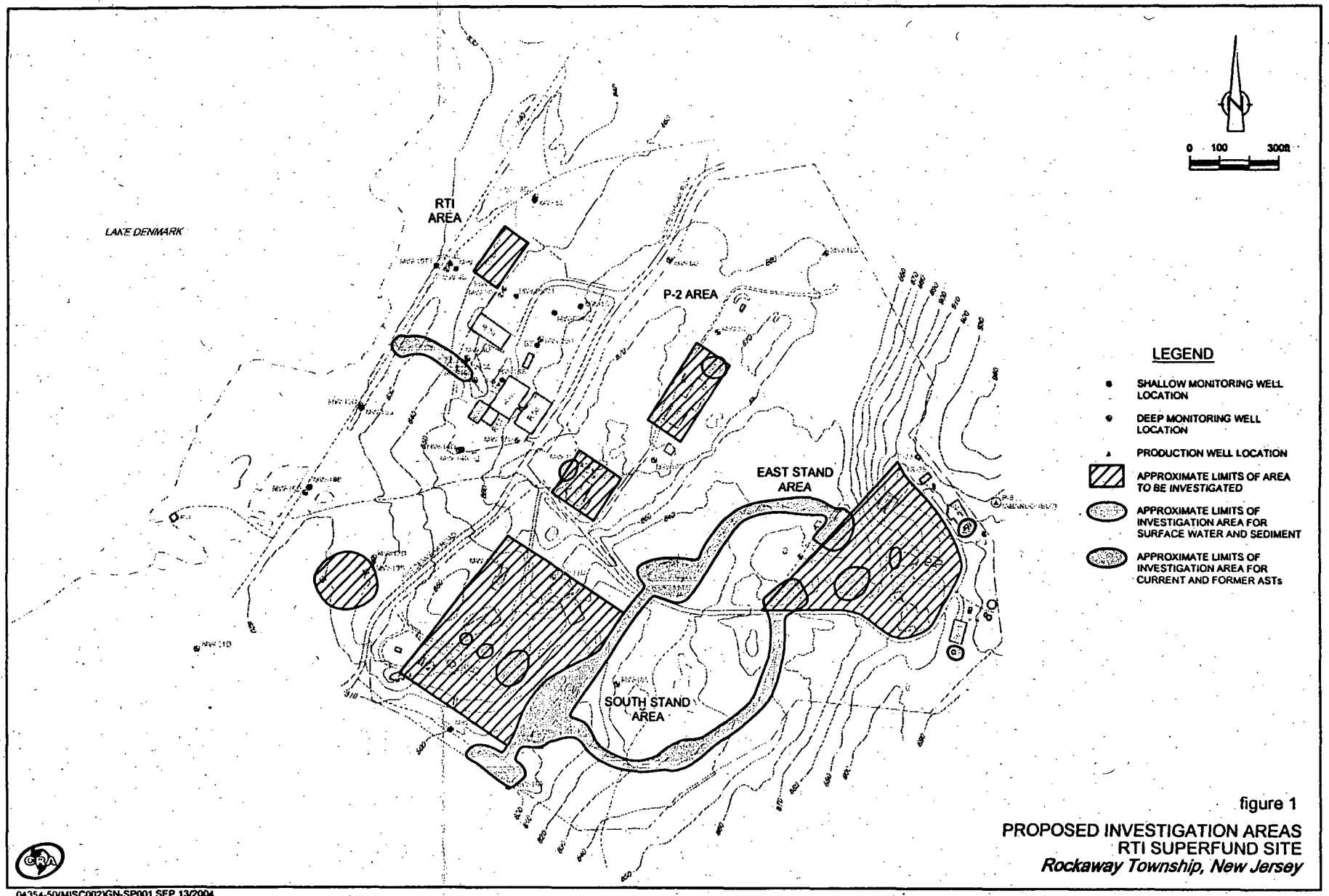

figure 1

PROPOSED INVESTIGATION AREAS
RTI SUPERFUND SITE
Rockaway Township, New Jersey

04354-50(MISC002)GN-SP001 SEP 13/2004

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